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1994

EPA Superfund
Record of Decision:

LEXINGTON COUNTY LANDFILL AREA
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CAYCE, SC
09/29/1994

RECORD OF DECISION

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

LEXINGTON COUNTY LANDFILL AREA SUPERFUND SITE

CAYCE, LEXINGTON COUNTY
SOUTH CAROLINA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA, GEORGIA

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Lexington County Landfill Area Site
Cayce, Lexington County, South Carolina

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Lexington County Landfill Area Superfund Site (the Site) in Cayce, South Carolina, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C § 9601 et seg., and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300 et seq. This decision is based on the administrative record for this Site.

The State of South Carolina, acting as a support agency, concurs with the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This remedial action addresses on-Site and off-Site groundwater contamination in addition to contaminated landfill waste material as the principal threat at this Site. On-Site sediment and surface water contamination is also addressed as part of the remedy.

The major components of the selected remedy include:

- Consolidation and capping of the waste areas, including deed restrictions for protection of the cap and the use of groundwater beneath the Site for drinking purposes;

- Methane gas collection and venting. Analysis for vinyl chloride will also be included;

- Extraction of contaminated groundwater/leachate and discharge to the POTW. Additional pretreatment will be performed, if necessary, to allow for discharge of the treated groundwater to a local publicly-owned treatment works (POTW); and

- Additional sampling of surface water and sediment to fully delineate extent of contamination and potential threat to aquatic and terrestrial life.

- Monitoring of groundwater, surface water, sediment, and landfill gas. The monitoring plan will be designed to detect contaminant migration, evaluate the effectiveness of the remedial action, and detect any new contaminants.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. The presumptive remedy chosen for this Site was based on EPA's expectation that containment technologies would be appropriate for municipal landfill waste, because the volume and heterogeneity of the waste makes treatment impracticable. This remedy utilizes alternative treatment technology to the maximum extent practicable for this Site.

This selected remedy will result in contaminated groundwater remaining on-Site above health-based levels until remedy implementation is complete. Therefore, five (5) year reviews will be conducted after initiation of remedial action to insure that the remedy continues to provide adequate protection of human health and the environment.

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John H. Hankinson, Jr. Date
Regional Administrator

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1.0 SITE LOCATION AND DESCRIPTION

The Lexington County Landfill Area Site (the "Site") is located in Lexington County, South Carolina (Figure 1-1). The Site consists of five properties and includes the 321 Landfill (a former municipal landfill), the Old Cayce Dump, and the Bray Park Dump. The Site is located in the geographical area known as the Sand Hills, which are remnants of ancient sand dunes within the Coastal Plain geologic province of South Carolina.

The 321 Landfill was formerly a sand mine excavated into the slope of a hill. The 321 Landfil1 operations began in May, 1972, at the 321 Landfill and ended in 1988 when the facility reached capacity and was closed with a clay cap. The Old Cayce Dump and the Bray Park Dump were used by local residences as household refuse dumps. Dumping at the Old Cayce Dump began in the 1940's and at the Bray Park Dump in the 1960's.

1.1 Site Description

The Site consists of five properties (Figure 1-2). The north property is approximately 41 acres and is owned by Mr. Wyman Boozer. The property in the center of the Site is approximately 97 acres and is owned by the cities of Cayce and West Columbia. W. Gregory Medlin owns two properties (3.2 acres each) along Route 321 in the south portion of the Site. Mrs. Beulah Sturkie owns one property (approximately 20 acres) in the south corner of the Site at the intersection of Route 321 and Bray Park Road. The 321 Landfill occupies approximately 16 acres of Mr. Wyman Boozer's property and approximately 51 acres of the center property. The Bray Park Dump is also located on the center property and the Old Cayce Dump is located on Mrs. Beulah Sturkie's property.

The north and center properties are open areas primarily as a result of the mining and the 321 Landfill operations. The 321 landfill is the most evident feature at the Site. The surface of the 321 Landfill slopes into the hillside in the northwest portion of the Site where a golf driving range is currently operated on the cap. A methane recovery system located adjacent to the driving range extracts methane gas from recovery wells installed within the 321 Landfill. Lexington County utilizes the southeast portion of the Site as a recreation facility. Approximately 25 acres have been excavated in the east portion of the Site and that portion is used as a sedimentation basin. Some of the excavated soils were used for cover material for the clay cap of the 321 Landfill. The excavated area is predominantly flat, sloping only two to three percent, and is bare of vegetation. A narrow strip of wooded land ranging from 100 to 300 feet in width separates the 321 Landfill and the Starmount Subdivision. The ruins of a cement block building exist in the west corner of the property.

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The southern properties are predominantly wooded with several small clearings and a large clearing in the southeast corner of the Sturkie property. A building currently used as a used tire shop is located on the Sturkie property at the intersection of Route 321 and Bray Park Road. A collapsed building exists approximately 150 feet northeast of the tire shop. An abandoned building is located on the southern Medlin property along Route 321.

The Bray Park Dump and the Old Cayce Dump are two subsurface waste burial areas located to the east and southeast of the 321 Landfill, respectively. Aside from scattered debris which can be seen in the general location of these two waste disposal areas, these two areas are relatively non-descript.

1.2 Site Topography and Drainage

The regional topography of "the sand hills" region of the Upper Coastal Plain area is characterized by relatively small hills and river valleys formed in poorly consolidated sediments. Elevations of the Site decrease southward from an approximate elevation of 310 ft above mean sea level (msl) at the north corner of the Site to an approximate elevation of 190 ft above msl at the southern boundary of the Site. A topographic high point exists immediately northwest of the Site.

The headwaters of the nearest stream originate at three springs within the south boundary of the

Site. The three channels formed by the springs merge into one primary channel south of Bray Park Road which flows toward the Congaree River located two miles southeast of the Site. Most of the storm water runoff is in the form of sheet flow until it reaches the two major drainage channel networks currently existing at the Site. One network drains the west side of the Site and the other drains the east side of the Site.

The channel network draining the west side of the Site originates within a large channel which parallels Route 321. This channel meanders through the Medlin properties in the south portion of the Site and opens into a large clearing on the Sturkie property. A tributary originating 300 feet east of the primary channel along the tree line south of the 321 Landfill joins the primary channel on the Medlin property.

The channel network draining the east side of the Site originates on the north edge of the 321 Landfill approximately 800 feet east of Route 321 . The mouth of the channel opens into the excavated area comprising the sediment basin in the east portion of the Site. Storm water that does not infiltrate the sandy surface soils is transported through sheet flow to the outlet of the sediment basin, located approximately 100 feet from the north athletic field at the Bray Park recreation facility. The outflow from the basin flows along a ditch which parallels the west edge of the Interstate 26 access road. A small tributary feeding the ditch collects storm water runoff along the south side of the athletic fields. A catch basin collects the receiving flow from the ditch and diverts it across Dixiana Road into a channel on the east side of Interstate 26.

2.0 SITE HISTORY AND PREVIOUS INVESTIGATIONS

The history of the Site has been formulated from correspondence of previous Site activities, a review of aerial photographs, and previous hydrogeologic and engineering investigations. The following sections provide an overview of Site activities, previous investigations, and a summary of findings regarding the hydrogeology and environmental quality at the Site.

2.1 Site History

Aerial photographs indicate that sand mining operations began in the northern portion of the Site sometime between 1938 and 1943. At that time, the remainder of the Site was primarily wooded, with a small pond (Stanley Pond) situated in the southwest portion of the property. Sand mining operations continued at the Site until the late 1960's.

In 1970, the cities of Cayce and West Columbia purchased 57 acres to use as the 321 Landfill. On December 10, 1971, the 321 Landfill was turned over to Lexington County. In January 1972 the 321 Landfill was permitted by the South Carolina Department of Health and Environmental Control (SCDHEC), and sanitary landfill operations by Lexington County began in May 1972. Shortly thereafter, an agreement was made between Mr. Wyman Boozer and Lexington County to fill an open pit on a portion of his 41-acre parcel by including it in the adjacent 321 Landfill operations. The 321 Landfill was operated utilizing compaction and daily cover which was the commonly accepted practice at the time. Landfilling continued until 1988 when the capacity of the facility was reached. The 321 Landfill closure took place in 1990 with the placement of a low permeability clay cap.

The Bray Park Dump is the location of the City of Cayce's former solid waste disposal operations. The Bray Park Dump was used by both the cities of Cayce and West Columbia from the mid-1960's to about 1970. The Bray Park Dump has been covered with several feet of soil. There is no visual surface evidence of its existence.

The Old Cayce Dump was used for solid waste disposal in the 1960's. Refuse was apparently placed there by individuals in an uncontrolled situation, with no formal operation of the Site by the City of Cayce. A portion of this dump was located in what was formerly known as Stanley Pond. The Old Cayce Dump was closed in 1969 and covered in 1972 by Lexington County. No surface topographic expression of the dump or former pond is evident today. The Old Cayce Dump area is currently covered with thick vegetation.

Waste disposal records for the Old Cayce Dump and Bray Park Dump are not available and, based upon the history of the operation of these areas, probably never existed. Waste disposal records for the 321 Landfill, however, are available. Through these records, the EPA was able

to prepare a list of potentially responsible parties (PRPs). Although a vast majority of the refuse in the 321 Landfill consisted of sanitary domestic waste, records indicate that certain types of industrial wastes were also disposed in the facility. Theae wastes included chemical solvents, petroleum products, and metallic wastes.

2.2 Previous Investigations

Several hydrogeological and engineering studies have been performed at or in the vicinity of the 321 Landfill during the 1975-1992 period. A total of 44 test holes or monitoring wells have been constructed as part of those investigations. In addition, water supply wells and nearby surface waters have been utilized to monitor water levels and/or water quality. In general, these investigations support the findings and conclusions of the RI/FS. The following paragraphs summarize the previous investigations.

EPA Research Study -- 1975-1976 - In 1975, the EPA funded a research project of the 321 Landfill in cooperation with Lexington County. A. W. Martin Associates performed the work and presented the findings in their 1975 report. The A.W. Martin report indicates that the sand quarry was excavated to the top of a clay layer in many portions of the Site. Chemical analyses of the groundwater samples indicated higher than background concentrations of aluminum, chloride, sulfate, iron, sodium, potassium oxides, and manganese. Sporadic concentrations of sodium, zinc, and copper were also detected above background concentrations.

Analyses of two surface water samples collected in the A.W. Martin investigation indicate higher concentrations of iron and manganese in the upstream sample (S-1 at Bray Park Road) than the downstream sample (S-2 at Dixiana Road). Analysis of the downstream sample (B) indicated that manganese, iron, chloride, magnesium, and calcium concentrations exceeded background concentrations of the upstream sample (HW).

J. Michel (1976) used essentially the same data collected for the A. W. Martin study, including chemical data from monitoring wells and water wells, and surface water chemistry data collected during the period April-December 1975. Michel described the chemical reactions in the vicinity of the 321 Landfill and evaluated the chemical transport of various parameters. The results of her study indicated that chlorides and specific conductance were the best indicators of leachate presence and migration. She concluded that increases of dissolved solids (primarily chlorides) in groundwater samples collected from down-gradient water supply wells were indications of a leachate front originating from the 321 Landfill. Michel indicated that there was an increase of magnesium, aluminum, and chloride in water samples collected from the deeper lysimeter installed at the 321 Landfill.

SCDHEC Study -- 1977-1979 - The SCDHEC study of the 321 Landfill area was performed during the period 1977-1979. The results of groundwater sampling activities indicated that chloride, iron, and manganese were detected above background concentrations in test well DH-2 immediately adjacent to the 321 Landfill. Concentrations of chromium (80 ug/1), lead (250 ug/1), arsenic (60 ug/1), and mercury (22.8 ug/1) were detected above their detection limits on one or more sampling dates; however, they were not detected on a consistent basis during the study period at any of the wells. No trends were apparent throughout the study period. Total and dissolved mercury was detected above the detection limit in groundwater samples collected from well WW-5 on more than one sampling event throughout the study. Based on sampling of surface water from the intermittent stream southeast of Bray Park Road, SCDHEC concluded that specific conductance, chloride, hardness, barium, chromium, and mercury concentrations were elevated during some sampling rounds and were the result of leachate production in the 321 Landfill and the Old Cayce Dump.

The Bray Park Dump was discovered during test drilling activities. The discovery of the Bray Park Dump prompted reconsideration of the previous water-quality conclusions that the 321 Landfill was the source of contaminants in the Rucker wells (WW-5, WW-7). Because original sampling of these wells indicated low concentrations of metals (lead, mercury, iron, manganese), SCDHEC officials believed that the groundwater quality had been impacted by leachate movement from the 321 Landfill.

Lexington County Monitoring Wells -- 1980-1981 - At the conclusion of the SCDHEC study, Lexington County installed four monitoring wells at locations selected by SCDHEC officials. The three downgradient wells were installed by Walker Laboratories and the upgradient well was

installed by a local well driller. Chemical analyses from these four wells indicated that chloride, total dissolved solids, cadmium, arsenic, selenium, and mercury exceeded background concentrations. Cadmium and selenium concentrations were reported to be 119 ug/1 and 15.1 ug/1 (respectively) in downgradient well MW-2. Arsenic and mercury concentrations were reported to be 30.2 ug/1 and 19.9 ug/1 (respectively) in downgradient well MW-4.

Lexington County Engineering Study -- 1981 - As part of a 1981 engineering study contracted by Lexington County, nine auger holes were drilled into the base of the active 321 Landfill to determine the local subsurface conditions (McNair, 1981). These test holes were located near the southeast margin of landfilling operations. Five of the boreholes terminated in trash. The remaining four bore holes encountered white, silty to sandy kaolinitic clay at elevations ranging from approximately 200 ft above mean sea level (msl) to 216 ft msl. Groundwater in the auger holes was considered to be perched above the clay.

S&ME Study -- 1982-1983 - In 1982, Site Consultants, Inc. and Soil & Material Engineers (S&ME) were retained by Lexington County to devise an improved groundwater monitoring system. S&ME divided the sedimentary strata into distinct hydrogeologic units which were referred to as the Upper Unit and Lower Unit. As part of that study, two monitoring wells (MW-5, MW6) were installed by S&ME to monitor the quality of groundwater within aquifer sands in the Lower Unit, which was shown to be separated from the Upper Unit by a low permeability clay layer.

Specific conductance values of samples collected from Upper Unit wells immediately downgradient of the 321 Landfill were significantly elevated in comparison to samples collected from wells located several hundreds of feet downgradient of the 321 Landfill (S&ME, Inc., 1984). Water samples collected from Lower Unit monitoring wells (MW-5, MW-6) had low specific conductance values with no evidence of groundwater quality degradation at that time.

S&ME Study -- 1985 - In conjunction with the initiation of a SCDHEC-approved and expanded groundwater monitoring program for the 321 Landfill, S&ME installed three additional monitoring wells. These three wells were included in the quarterly monitoring program beginning in 1986, and the results of chemical testing of groundwater from these wells have been included in quarterly and annual monitoring reports submitted to the SCDHEC.

EPA Study -- 1987 - EPA Region IV personnel performed a Site inspection of the Lexington County Landfill Area Site during February 23-26, 1987. During their inspection, EPA staff collected 11 surface soil and sediment samples, six surface water samples, and 10 groundwater samples (six from monitoring wells, and four from domestic water supply wells). Analysis of the groundwater sample collected from well MW-2 indicated elevated concentrations of metals and organic compounds that were not detected in samples from the other nine wells (MW-8, MW-9, MW-10, MW-5, WW-3, WW-29, DH-13, WW-4, and WW-5). Analyses of surface water samples indicated elevated concentrations of metals and organic compounds at three of these sample locations.

Westinghouse Study -- 1989 - Westinghouse Environmental and Geotechnical Services, Inc. (Westinghouse) performed an additional assessment for Lexington County in 1989. These assessment activities included an electromagnetic (EM) survey, laboratory soil tests, borehole permeability tests, water quality analyses, and the installation of nine test wells. This investigation evaluated the hydraulic confinement of the Lower Unit. The clay confining bed was determined to be present at all Lower Unit well locations with thicknesses ranging from 9 ft (TW-2D) to over 20 ft (MW-5).

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Community relations activities were conducted in accordance with Sections 113(k), 117(a), and 121(f) of CERCLA 42 USC § 9617. Interviews with residents were conducted in January 1992. A Community Relations Plan was developed and an information repository was established at the Lexington County Library in July 1992. A fact sheet announcing the start of the Remedial Investigation/Feasibility Study (RI/FS) was issued by EPA in early June 1992. On July 14, 1992, EPA held a public meeting at the Grace Chapel Church to inform the public of the RI/FS process. The meeting was attended by more than 40 citizens. EPA's presentation to the public included information on how to participate in the investigation and remedy selection process under CERCLA. RI field work was initiated in October 29, 1992, and continued through February 26, 1993. Additional field work was conducted from April 20, 1993, through May 13, 1993. The final Remedial Investigation/Feasibility Study Report was released to the public and placed in

the information repository on April 6, 1994.

Following completion of the RI the FS, EPA released the proposed plan fact sheets on April 7, 1994. An advertisement was published in the local newspapers on April 6, 1994, informing the public of the proposed plan, public meeting, and the public comment period, which extended from April 6, 1994, to May 6, 1994.

The public meeting for the Proposed Plan was held on April 14, 1994, to present the Agency's selection of preferred alternatives for addressing contaminated subsurface waste and groundwater at the Site. Representatives from SCDHEC were present at this public meeting. A request was made (and granted) for a 30 day extension to the public comment period, which extended the closing date to June 6, 1994. Public comments and questions are documented in the Responsiveness Summary, Appendix A.

4.0 SCOPE AND ROLE OF THIS ACTION WITHIN SITE STRATEGY

The purpose of the remedial alternative selected in this ROD is to reduce future risks at this Site. The remedial action for contaminated subsurface waste will remove future health threats by preventing leaching of the contaminants to groundwater. The groundwater remedial action will remove future health threats posed by potential usage of contaminated groundwater. Additional activities will include imposition of deed restrictions to protect the integrity of the cap and prevent the utilization of groundwater beneath the Site for drinking purposes, venting of methane gas, and sampling of surface water and sediment to further evaluate the ecological threat to area wildlife and aquatic biota. This is the only ROD contemplated for this Site.

5.0 SUMMARY OF SITE CHARACTERISTICS

The RI investigated the nature and extent of contamination on and near the Site, and defined the potential risks to human health and the environment posed by the Site. A total of seventy-seven methane samples, thirteen sediment samples, thirteen surface water samples, four leachate samples, and forty groundwater samples were collected during the RI. The main portion of the RI was conducted from October 1992 through February 1993, followed by additional groundwater sampling between April 20 through May 13, 1993. The sampling locations are shown in Figures 5-3 and 5-4.

5.1 Geologic and Hydrogeologic Setting

The Site is within the inner margin of the Upper Coastal Plain, which is underlain by a southeastward-thickening wedge of unconsolidated sedimentary sands and clays of Late Cretaceous to Recent (Holocene) age. These sediments overlie crystalline bedrock. The unconsolidated sedimentary geologic strata beneath and in the vicinity of the Site range from about 150 ft thick to 250 ft thick, and generally dip to the southeast at a rate varying from about 15 ft/mi to as much as 35 to 40 ft/mi. However, the dips of Upper Cretaceous and Tertiary sediments at the Site have been considerably affected by post-depositional erosion, and erosional dips are locally greater than 40 ft/mi.

Four geologic units underlie the Site - the bedrock, the Middendorf Formation, a sequence of Lower Tertiary clastics, and the Pinehurst Formation. A fifth geologic unit, referred to as alluvium, is located south of the Site.

Bedrock - Crystalline bedrock or the saprolitic clay overlying crystalline bedrock was penetrated at a depth of 185 feet at well TW-32D and at 165 feet at well WW-30 at Foster-Dixiana Company immediately west of the 321 Landfill. Generally, the bedrock in this area is overlain by a hard, micaceous saprolitic clay which was reported by the driller to be 13 feet thick at well WW-30. Most water wells are terminated when this hard clay is penetrated, and wells are screened opposite sands within the overlying Middendorf Formation.

Middendorf Formation - The Middendorf Formation (also referred to by some geologists as the Tuscaloosa Formation) of Late Cretaceous age unconformably overlies the eroded surface of the bedrock or saprolite overlying bedrock. The Middendorf is composed of alternating beds of poorly sorted, very fine to coarse-grained arkosic sands and dense kaolinitic clays that were deposited in upper deltaic and fluvial environments. The Middendorf thickens from about 75 feet beneath the higher elevations at the 321 Landfill to 150 feet or more southeast of the Site.

Most of the deeper water wells in the vicinity of the 321 Landfill are screened opposite artesian fine to coarse-grained aquifer sands within the lower part of the Middendorf Formation. The lower part of the Middendorf Formation is a moderately productive aquifer which is under artesian conditions in the vicinity of the Site. This lower part of the Middendorf Formation has been referred to as the Lower Hydrogeologic Unit, or simply Lower Unit, in previous reports and in this Record of Decision.

Lower Tertiary Clastics - The Middendorf Formation is unconformably overlain by a sequence of poorly sorted, very fine to coarse, clayey and silty arkosic and quartz sands and kaolinitic clays of Tertiary age, which was referred to as the Black Mingo Formation by Padgett (1981) and S&ME (1983) and as the Huber Formation by Smith (1977). These strata are designated "Lower Tertiary clastics". These Lower Tertiary clastics are the upper part of the Upper Hydrogeologic Unit, or simply Upper Unit, as described in this ROD. Low-permeability aquifer sands occur within the lower part of the Lower Tertiary unit.

Pinehurst Formation - The higher elevations of the Site are underlain by a sequence of loose, wind-blown (eolian) sands that have been referred to as the Pinehurst Formation by Kite (1985). These sands are as much as 50 feet or more thick beneath higher elevations of the Site and surrounding areas, and unconformably overlie the Lower Tertiary unit. The sands of the Pinehurst, where present, are generally unsaturated, but are permeable and allow downward infiltration of precipitation into sands of the lower Tertiary unit.

Alluvial Sediments - The Holocene (Recent) alluvial sands and clays deposited by the ancestral Congaree River occur south and southeast of the Site, but are not present beneath the Site north of Dixiana Road. Padgett (1981) described the geology and hydrogeology of these alluvial sediments underlying the SCRDI Dixiana Site.

5.2 Hydrogeology

S&ME (1983) subdivided sediments above the bedrock into Upper and Lower Units at the Site. Geologic cross-sections were constructed to evaluate the geology of the Upper and Lower Units. The thickness, stratigraphic relationships, and lithologies of these hydrogeologic units are presented in five cross-sections of the Site as illustrated in the RI. The physical and hydrologic characteristics of these units are summarized in the following paragraphs.

Upper Unit

The Upper Unit consists of the Pinehurst Formation, the Lower Tertiary Clastics (probably Black Mingo Formation) and the alternating sands and clays within the upper part of the Middendorf Formation. A laterally persistent clay bed, referred to as the lower confining clay of the Upper Unit, separates the Upper and Lower Units. These marginal marine sediments are primarily sands and interbedded clays and silts. The sands consist of white to light brown, well sorted fine sands and pale orange to yellowish orange poorly sorted, fine to very coarse quartz sands and are typically crossbedded. Kaolinitic clay lenses ranging from white to reddish purple are also interbedded within the sands. Erosional scarps and troughs may be prevalent within these sediments. The following sequence of strata is present within the Upper Unit; the upper sands, the middle sands, the upper confining clay, the lower sands/middle confining clay, and the lower confining clay.

Three laterally extensive clay confining beds and three interbedded sands are present within the Upper Unit. The upper sands of the Upper Unit are eolian sediments of the Pinehurst Formation that overlie the Tertiary clastics beneath the higher elevations in the north half of the Site. The sediments consist primarily of moderately to poorly sorted, fine to coarse quartz sand, and are not saturated. Several large clay lenses and clay beds occur within the basal portion of these sands, some of which locally confine the middle sands.

The middle sands overlie the upper confining clay and consist primarily of white to grayish pink quartz sands. These sands appear to have been deposited unconformably on the eroded surface of the upper confining clay, and erosional channels are present in the upper and middle confining clays. Several small black clay layers typical of back-barrier depositional environments overlie these sands in several borings in the south portion of the Site at elevations ranging from 165 to 175 feet msl. Groundwater chemistry data indicate that contaminants within the Upper Unit primarily migrate within these sands in the south and east

portions of the Site.

The upper confining clay appears to occur throughout the Site; however, breaches within this clay bed are apparent in the north, east, and southwest portions of the Site. The thickness of the upper confining clay ranges from 5 to 18 feet.

The lower sands within the Upper Unit exist between the upper and lower confining beds and consist primarily of poorly sorted, clayey fine to coarse quartz sands. Clay and silt are common in the sands. These sediments are present below an elevation of approximately 150 to 190 feet msl. Several of these lower sands were not saturated in the north portion of the Site. The middle confining clay, a 3 to 5 foot thick sandy clay, is interbedded within the lower sands in the south and east portions of the Site.

The lower confining clay, ranging from 5 to 19 feet thick, mark the base of the Upper Unit, and appears to be continuous throughout the Site; however, a channel is apparent in the south portion of the Site at test well TW-27S. The clays are dense, dry, and have low permeabilities as indicated by the geologist logs, gamma logs, and laboratory permeability tests.

Lower Unit

The Lower Unit is in the basal sand sequence within the Middendorf Formation and contains the more permeable artesian aquifer sands used in the area for groundwater supplies. The Lower Unit is composed predominantly of poorly sorted, very fine to very coarse quartz sand and pebbles. Orthoclase, muscovite, pyrite, and various heavy minerals occur within the sands. Interbedded clay laminae and clay lenses occur within these sands. These sands are the most permeable strata within the Lower Unit.

5.2 Nature and Extent of Contamination

Based on information presented in the Remedial Investigation, the environmental contamination at the Site can be summarized as follows:

1. The following waste disposal areas were identified during the Remedial Investigation: The 321 Landfill, the Bray Park Dump, the Old Cayce Dump, and a separate area (Waste Area No. 3) between the Bray Park Dump and the Old Cayce Dump.

2. A methane gas plume is present in areas along SC Highway 321 including the southern corner of the 321 Landfill. The gas plume extends along Bray Park Road adjacent to the stream culverts and along areas adjacent to the methane recovery system.

3. Groundwater in the Upper Unit is contaminated with both organic and inorganic contaminants. Groundwater in the lower unit is also contaminated with several organic and inorganic contaminants but to a lesser extent than the Upper Unit.

4. Both organic and inorganic contamination is present in leachate, surface water, and sediment samples collected from the immediate vicinity of the Site.

5.2.1 Waste Disposal Areas

Electromagnetic (EM) surveys were performed at the Site to delineate the lateral extent of the Bray Park and Old Cayce Dumps. Test pits were excavated along the suspected perimeters of each dump to verify the results of the EM survey. The actual boundaries of the Bray Park Dump and Old Cayce Dump (Figure 5-1) corresponded to the electromagnetic anomalies measured during the EM survey. Domestic trash and construction debris were observed within test pits excavated within the perimeters of the two dumps. Toxicity Characteristic Leaching Procedure analyses of soil samples collected at the base of the two dump sites identified concentrations of barium (1.5 to 5.7 mg/kg), cadmium (0.038 mg/kg), and lead (0.094 mg/kg).

5.2.2 Methane Gas Survey

The locations of the potentially affected population for methane gas and the methane survey stations are illustrated in Figure 5-2. The highest concentration of methane (43% Lower Explosive Limit LEL or 22,790 ppm) was detected at survey station SV-34 along Route 321.

Methane was detected at adjacent stations SV-56, SV-58, and SV-60 below 20% LEL, and in the southern corner of the 321 Landfill at well TW-2S. The extent of the methane gas plume will be further delineated during the Remedial Design. Additional data will be collected during the Remedial Design to confirm the extent of the plume within the area of the sedimentation basin.

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Methane concentrations were also detected at survey stations SV-1 (4% LEL) and SV-2 (1% LEL) adjacent to stream culverts along Bray Park Road. Methane was also detected at station SV-64 (<1% LEL) adjacent to the existing methane recovery facility for the 321 Landfill. The existing methane gas recovery system, installed during 1986, recovers methane for resale to nearby industries.

5.2.3 Leachate Samples

Leachate samples were collected from leachate seeps on the north side of the 321 Landfill (LS-1, LS-2) and from a leachate seep on the east side of the 321 Landfill (LS-3). A water sample (LS-4) was collected from a small seep, or spring, located southeast of the 321 Landfill (Figure 5-3).

Organic compounds including acetone (27 ug/1 to 66 ug/1), 2-butanone (11 ug/1 to 22 ug/1), 4-methyl-2 pentanone (3 ug/1), phenol (410 ug/1 to 2300 ug/1), and methylphenols (25 ug/1 to 4800 ug/1) were detected in leachate samples LS-1 and LS-3. Toluene, diethylphthalate, and bis(2-ethylhexyl)phthalate, were also detected in leachate sample LS-3. Benzene, ethylbenzene, and xylenes were detected in leachate sample LS-2 at concentrations below the contract required detection limit (CRDL).

Chemical data indicate that there was no correlation between organic compounds detected in the leachate samples and organic compounds detected in sediment samples collected at the same sample locations. None of the semi-volatile organic compounds identified in the leachate samples were detected in the associated sediment samples. Bis (2-ethylhexyl)phthalate (480 ug/kg) was detected in sediment sample SED-11 near leachate LS-1. Concentrations of indicator parameters at LS-4 indicate that the water quality of this seep is probably representative of a fresh-water spring.

Inorganic analyses indicate that sample LS-1 and LS-3 contained concentrations of barium (587-1510 ug/1), calcium (62.4-82.9 mg/1), cobalt (58.1-65.1 ug/1), copper (114-185 ug/1), magnesium (17-59 mg/1), nickel (57.8-242 ug/1), lead (10.0-31.6 ug/1), and zinc (18.8-19.7 mg/1). These metals are likely characteristic of leachate generated by the Site. Cadmium (13.0 ug/1) and manganese (2400 ug/1) were also detected in LS-1. Concentrations of calcium (84.7 mg/1) and iron (17.1 mg/1) detected in LS-2 exceeded concentrations present in LS-4. Leachate generated by infiltration of rainwater into the Site is the likely source for the presence of these metals.

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5.2.4 Surface Water and Sediment Samples

Surface water and sediment samples were collected along the two major drainage channel networks present at the Site (Figure 5-3). Exceedences of chronic concentrations of chlorides and ammonia indicate potential ecological impact to surface water at Sites SW-1 through SW-4 along the surface water south of the Site. Additional surface water samples will be collected along the stream during the Remedial Design to determine the extent of the potential ecological impact to water quality on the biota.

Benzene and chlorobenzene were detected below the Contract Required Detection Limit (CRDL)(10 ug/1) in surface water samples SW-1, SW-2, and SW-7 located at the headwaters of the streams along Bray Park Road. These compounds were not detected in downstream samples SW-3 and SW-4. Acetone was detected in surface water sample SW-5 collected at the outlet of the sediment basin. Acetone was also detected in sediment samples SED-3, SED-4, SED-5, and SED-7. Acetone has been detected in leachate, surface water, and sediment samples collected along the east drainage channel network. Analyses of sediment samples SED-11 and SED-13 indicate the presence of

vanadium (3.2 mg/kg), zinc (5.8-7.1 mg/kg), and lead (0.81-1.1 mg/kg). Barium (3.7 mg/kg) was also detected in SED-11.

Bis(2-ethylhexyl)phthalate was detected in surface water samples SW-4 and SW-5 at concentrations less than 4 ug/1. A concentration of 0.2 ug/1 of butylbenzyl phthalate was detected in the duplicate SW-5 surface water sample. Di-n-octylphthalate and Bis(2-ethylhexyl)phthalate were also detected in several sediment samples. Several other semi-volatile organic compounds were detected in sediment sample SED-7 but were not detected in downstream surface water or sediment samples.

Analyses of sediment and surface water samples collected down-stream of the Old Cayce Dump indicate that several inorganic contaminants appear to be related to wastes within the Old Cayce Dump. Barium, calcium, iron, magnesium, manganese, potassium and sodium were detected at higher concentrations in surface water samples SW-1, SW-2, SW-3, and SW-7 than in downstream sample SW-4. Analyses of sediment indicate that barium, calcium, iron, and manganese precipitate from the surface water at sample location SED-4. Magnesium, sodium, and potassium appear to remain soluble in the surface water. Aluminum, chromium, vanadium, zinc, and lead concentrations detected in sediment samples SW-3 and SW-4 may indicate a source of these metals downgradient of the Site. Aluminum, barium, chromium, copper, iron, vanadium, zinc, and lead concentrations were detected in surface water sample SW-5.

A macroinvertebrate assessment was performed at the streams south of the Site to evaluate the potential impact on the aquatic environment. Macroinvertebrate samples were collected from two control stations (C-1 and C-2) located along Fish Hatchery Road within separate drainage basins northwest of the Site. Low flow rates observed during the assessment indicated that intermittent stream conditions may not have been, nor ever will be conducive to larger populations. The data showed no discernible difference in macroinvertebrate communities located downstream of the Site and control station C-1. However, the impact of the drought conditions on the macroinvertebrate communities may have affected the data. Although the Site poses a potential threat to ecological life, the limited data collected during the Remedial Investigation does not justify remediation at this time. Additional sampling will be performed during the Remedial Design to confirm this position. Remedial action will be performed should sampling results indicate such a need.

5.2.5 Groundwater

Groundwater Contamination - Upper Unit

Groundwater sampling stations are presented in Figure 5-4. Previous investigations had shown that chloride was the best indicator, or "fingerprint," of groundwater contamination at the Site because of its high solubility and mobility in groundwater, and low background concentrations. The distribution of chloride concentrations in groundwater within the Upper Unit is illustrated on Figure 5-5. The distribution of chloride indicates that two extensions of the plume follow the two groundwater components flowing southeast.

Total organic halogen (TOX) and ammonia concentrations also showed close correlation with chloride concentrations and extent of the plume. TOX concentrations exceeded background concentration (0.05 mg/1) in 10 Upper Unit test wells located east/southeast of the 321 Landfill. Based on these concentrations, pesticides and PCBs were analyzed during the second round of chemical analyses.

Laboratory analyses indicate that benzene and chlorobenzene are the primary volatile organic compounds associated with the contaminant plume in the Upper Unit. Figure 5-6 illustrates the distribution of benzene concentrations within the Upper Unit, which resembles the chloride concentration distribution. Benzene was detected at concentrations exceeding the Maximum Contaminant Level (MCL = 5 ug/1) in groundwater samples collected from most of the Upper Unit test wells on-Site. Benzene was not detected in test wells TW-41S, TW-42S, or TW-45S located within Starmount Subdivision. Concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in groundwater samples collected during Round 1 and Round 2.

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Concentrations of tetrachloroethene (PCE), trichloroethene (TCE), dichloroethenes (DCE's), 1,1,1-trichloroethane (TCA), dichloroethanes (DCA's), and vinyl chloride were detected slightly above and below the CRDL in Upper Unit wells. Most of these compounds were detected in groundwater samples collected from wells TW-20 to TW-22 during Round 1; however, only TCE and 1,2-DCE were detected in the groundwater at these two wells during Round 2. Vinyl chloride, PCE, 1,1,1-TCA, 1,1-dichloroethene, and 1,2-dichloroethane were not detected in groundwater samples collected during Round 2. TCE was detected above the MCL (5 ug/1) in groundwater samples collected from well TW-20S during Round 1 (9 ug/1) and Round 2 (8 ug/1).

Concentrations of semivolatile compounds were detected primarily below the CRDLs in Upper Unit groundwater samples collected at the Site during Round 1.

Pesticide compounds were detected in down-gradient Upper Unit wells during the Round 2 analyses. Concentrations of alpha-BHC were detected in groundwater samples collected from wells TW-12S (0.0043 ug/1), and TW-28S (0.003 ug/1). Beta-BHC was detected in groundwater samples collected from wells TW-25S (0.035 ug/1), TW-27S (0.017 ug/1), and TW-28S (0.0094 ug/1). Gamma-BHC (0.013 ug/1) and Endosulfan II (0.012 ug/1) were also detected in the groundwater sample collected from well TW-25S. Heptachlor was detected in samples collected from wells TW-12S (0.0095 ug/1), TW-20S (0.0063 ug/1), and TW-27S (0.0048 ug/1). Concentrations of all of these compounds are below the established MCLs. Pesticides were detected in groundwater within the Upper Unit at locations where other contaminants have been detected and, therefore, are believed to be Site-related. Polychlorinated biphenyls (PCB's) were not detected in groundwater at the Site.

Laboratory analyses of inorganic parameters indicate that sodium, potassium, iron, magnesium, calcium, and barium are associated with the groundwater plume within the Upper Unit. Chromium, copper, lead, nickel, and arsenic were detected in the groundwater in several Upper Unit test wells; however, concentrations of these inorganics were not detected consistently between Round 1 and Round 2 sampling events. Arsenic has been detected in groundwater samples collected from test wells TW-2S and TW-12S located southeast and down-gradient of the 321 Landfill. Arsenic was also detected during the second round of sampling in groundwater samples collected from well TW-25S east of the 321 Landfill, and wells TW-42S and TW-45S, located north of the 321 Landfill.

The highest concentrations of all of the metals were detected in test well TW-45S including elevated levels of beryllium and cadmium. Several industries are located upgradient of well TW-45S. Well TW-45S will be resampled during the Remedial Design to evaluate the impact to groundwater quality.

Groundwater Contamination - Lower Unit

The primary volatile organic compounds detected in groundwater within the Lower Unit are benzene and chlorobenzene. These two compounds were detected in groundwater samples collected from test well TW-32D during Round 1 and Round 2. A benzene concentration of 12 ug/1 was also detected in the groundwater sample collected from well WW-3. The MCL for benzene is 5 ug/1.

During Round 1 sampling, concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were detected in groundwater samples collected from Lower Unit test wells. Ethylbenzene and xylenes were not detected in groundwater samples collected from Round 2 sampling activities. Concentrations of benzene (12 ug/1), acetone (31 ug/1), toluene (2 ug/1), and 1,1-DCE (3 ug/1) were detected in the sample from unused water well WW-3 at Bray Park. Concentrations of benzene (9 ug/1), chlorobenzene (3 ug/1), methylene chloride (5 ug/1), vinyl chloride (5 ug/1), 1,1-DCA (7 ug/1) and 4-methyl-2-pentanone (2 ug/1) were detected in the groundwater sample collected from test well TW-32D.

Concentrations (less than 10 ug/1) of semi-volatile organic compounds were detected in groundwater samples collected from Lower Unit test wells including phenol, bis(2-ethylhexyl)phthalate, naphthalene, di-n-octylphthalate, diethylphthalate, 1,4-dichlorobenzene, and 2-methyl naphthalene.

Inorganic parameters consisting of barium (40.4 ug/1), calcium (11,600 ug/1), chromium (11.3 ug/1), copper (30.3 ug/1), iron (34,400 ug/1), and sodium (153,000 ug/1) were detected in the groundwater sample collected from water well WW-3. Concentrations of lead, chromium, vanadium, copper and barium were detected in the groundwater within the Lower Unit but were not detected consistently between Round 1 and Round 2 sampling events. Inorganic primary drinking water

standards (MCLs) were not exceeded in any groundwater samples collected from Lower Unit test wells. Inorganic secondary MCLs were exceeded for aluminum, iron, manganese, and sodium in the water sample collected from water well WW-3.

The occurrence of metals and organics in the Lower Unit at well WW-3, TW-32D and WW-31 may be related to poor well construction rather than to downward leakage of contaminants from contaminated sands within the Upper Unit. Additional evaluation will be performed during the Remedial Design to verify this hypothesis.

6.0 SUMMARY OF SITE RISKS

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public welfare or the environment.

A Presumptive Remedy approach as presented in EPA's directive No. 9355.0-49FS was utilized for this Site. A Risk Assessment was conducted by EPA to evaluate the risks to human health and the environment, under present-day conditions and under assumed future use conditions. The streamlined approach for municipal landfills (Presumptive Remedy) consisted of identifying chemicals present in groundwater and comparing them to Applicable or Relevant and Appropriate Requirements (ARARs) and Preliminary Remediation Goals (PRGs). Those chemicals that exceeded these values for a given pathway were noted for remedial action, and as such, were not incorporated into the calculations for Site risk for that pathway. Under the Presumptive Remedy approach, any chemical exceeding an MCL is assumed to result in a site risk. A list of these chemicals for all pathways is presented in Table 6-1. The remaining chemicals which did not exceed ARARs for a particular pathway were included in the discussion of the Site risks if the results indicated that a contaminant might pose a significant current or future risk or contribute to a cumulative risk which is significant.

The presumptive remedy for municipal landfills, which as applied to this Site, requires that a protective cap be placed over the waste disposal areas. See discussion at Section 7, p. 37 of this ROD. Under such conditions the surface soils could not present a potential threat, and therefore were not evaluated.

6.1 Human Health Risks

The human health risk assessment evaluated the nature and extent of the threat to public health caused by the release or threatened release of hazardous substances from the Site. The contaminated media at the Site as identified through the Remedial Investigation are groundwater, surface water, sediment and leachate.

The Site land use is currently zoned for commercial usage and is expected to remain as such in the future. Groundwater is currently used as a source for drinking, showering, cooking, dish washing, laundering and gardening for properties surrounding the Site.

6.1.1 Exposure Assessment

The following media were evaluated for this Site: groundwater, surface water, and sediment. The pathways for groundwater include the upper and lower aquifer for both on-Site and off-Site conditions. The groundwater pathways were evaluated for ingestion of contaminated groundwater, inhalation of volatiles while showering and cooking, and dermal (skin) absorption while showering. Other potential exposure pathways evaluated were the incidental ingestion and dermal contact with surface water and sediment. Exposure pathways involving air as a medium were not considered due to the presumptive remedy which includes capping of waste disposal areas and gas control.

TABLE 6-1
CHEMICALS EXCEEDING ARARS/PRG

CHEMICALS	MAX. CONC. DETECT. UG/L	MCL UG/L	RISK BASED PRG** UG/L
Benzene	85	5	0.62
Bis(2-ethylhexyl)phthalate	20	4	6.07
Bromodichloromethane	5	100	1.42
1,4-Dichlorobenzene	5	75	3.5
1,1-Dichloroethene	2	7	0.017
1,2-Dichloroethane	1	5	0.197
Methylene Chloride	7	5	6.3
Tetrachloroethene	15	5	365
Trichloroethene	9	5	__
Vinyl Chloride	8	2	0.03
Arsenic	30.5	50	0.05
Barium	1,560	2,000	2,560
Beryllium	21.6	4	O.02
Cadmium	5.1	5	18.3
Chromium	454	100	183
Lead	183	15*	__
Manganese	4010	__	180
Nickel	242	100	730
Vanadium	880	--	70
Zinc	8,180	--	3,000

* Value presented for lead is based on EPAs action level. No MCL has be

** PRGs (Preliminary Remediation Goals) for carcinogens were calculated
risk level by both the inhalation and the oral cancer slope factor. PRG
were calculated by dividing the target hazard index by both the inhalati
dose.

Populations that could potentially be exposed to Site contaminants include current and future residents in addition to current and future visitors. Based on these potential receptors, seven exposure pathways were selected for further numerical risk quantification:

- Ingestion of groundwater
- Inhalation of volatiles while showering and cooking
- Dermal absorption while showering
- Incidental ingestion of surface water*
- Dermal contact with surface water*
- Incidental ingestion of sediment*
- Dermal contact with sediment*

* Youth (age 7-16 years) only

In order to quantify the exposure associated with each pathway, various standard assumptions were made for key variables in the exposure calculations. These variables include the contaminant level in the medium, usually referred to as the exposure point concentration; and the amount of the contaminant taken into the body, or chronic daily intake, which must be calculated using a number of assumptions.

6.1.2 Risk Characterization

The final step of the Baseline Risk Assessment consists of the generation of numerical estimates of risk. Tables 6-2 and 6-3 present summaries of the total hazard quotient (non-carcinogenic risk) and total cancer risk associated with the Site.

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a life-time as a result of exposure to the carcinogen. Excess life-time cancer risk is calculated from the following equation:

Risk = CDI x SF

Where:

Risk = a unit-less probability (e.g., 2 x 10-5) of an individual developing cancer;

CDI = chronic daily intake averaged over 70 years (mg/kg-day) and;

SF = slope-factor, expressed as (mg/kg-day)-1

These risks are probabilities that are generally expressed in scientific notation (e.g., 1 x 10-6 or 1E-6). An excess lifetime cancer risk of 1E-6 indicates that, as a reasonable maximum estimate, an individual has a 1 in 1,000,000 chance of developing cancer as a result of Site related exposure over a 70 year lifetime under the specific exposure conditions at the Site. EPA generally uses the 1E-4 to 1E-6 risk range as an "acceptable risk range" within which the Agency strives to manage risks as part of the Superfund cleanup.

The highest risk values presented (3.23E-6 for on-Site upper unit wells and 4.98E-6 for the lower unit wells) are within the acceptable risk range. However, EPA may decide that a risk level less than 10-6 (i.e., a risk between 10-4 and 10-6) is unacceptable due to site-specific conditions and that remedial action is warranted. For this Site, EPA believes that Remedial Action is warranted since MCLs were exceeded for groundwater. Groundwater accounted for the greatest risk associated with this Site. The majority of the total carcinogenic risk is attributable to exposure to 1,4-Dichlorobenzene.

NON-CARCINOGENS

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., life time) with a reference dose derived for a similar exposure period. The rate of exposure to toxicity is called a hazard quotient (HQ). A Hazard Index equal to or greater than 1 is considered to exceed an acceptable risk level. By adding the HQs for all contaminants of concern that affect the same target organ (e.g., liver) within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HQ is calculated as follows:

Non-Cancer HQ = CDI/RfD

Where:

CDI = Chronic Daily Intake, and;

RfD = Reference Dose

CDI and Rfd are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short-term).

Future non-carcinogenic risk is estimated as HI = 8.6 for current child resident exposed to off-Site upper unit groundwater. Exposure through ingestion of groundwater is the major contributor to the risk. Exposure to Chromium accounted for the largest percentage of this risk. These levels justify remedial action for this Site. The human health risk associated with exposure to surface water and sediment are below the Agency's level of concern.

6.2 Environmental Risks

Because land use on the surrounding properties is zoned for both residential and commercial usage, the ecological communities surrounding the Lexington County Landfill Area Site have been altered from their natural state.

As a result of the different toxicity of some chemicals to fish and wildlife as compared with human receptors, the chemicals of concern for ecological assessment were different from those evaluated in the human health risk assessment.

Both the Least Shrew and the Chipping Sparrow were selected for evaluation as the terrestrial species likely associated with this Site. The Least Shrew was evaluated for soil and surface water ingestion while the Chipping Sparrow was evaluated for ingestion of plant seed, soil and surface water.

The results of the environmental risk assessment indicate that this Site poses a potential threat to terrestrial life. The contaminants responsible for this risk are presented in Table 6-4. The majority of the estimated risk for terrestrial life is attributed to surface water.

A benthic macroinvertebrate evaluation was performed to evaluate the Site's impact on area streams. Drought conditions resulted in low stream flow which, in turn, adversely affected the reliability of the study.

TABLE 6-2
HAZARD INDICES

	EXPOSURE PATHWAYS			
	INGESTION OF GROUNDWATER	NON-INGESTION OF GROUNDWATER	DERMAL CONTACT WITH SURFACE WATER	DERMAL CONTAC WITH SEDIME
	Current Child Resident (1-6 Years Old)			
Groundwater: Off-Site Upper Unit Wells	8.5	0.14	N/A	N/A
Groundwater: Off-Site Lower Unit Wells	0.18	N/A	N/A	N/A
	Current Youth Resident (7- 16 Years Old)			
Off-Site Upper Unit Wells	5.7	0.09	0.25	0.00
Off-Site Lower Unit Wells	0.12	ND	0.25	0.00
	Current Adult Resident			
Off-Site Upper Unit Wells	3.6	0.06	N/A	N/A
Off-Site Lower Unit Wells	0.08	N/A	N/A	N/A
	Future Child Resident (1-6 Years Old)			
On-Site Upper Unit Wells	0.80	0.22	N/A	N/A
On-Site Lower Unit Wells	2.4	0.11	N/A	N/A

ND - Not Detected or not chosen as a chemical of con
N/A - Not applicable

TABLE 6-2
HAZARD INDICES (continued)

	EXPOSURE PATHWAYS			
	INGESTION OF GROUNDWATER	NON-INGESTION OF GROUNDWATER	DERMAL CONTACT WITH SURFACE WATER	DERMAL CONTAC WITH SEDIME
Future Youth Resident/Visitor (7-16 Years Old)				
On-Site Upper Unit Wells	0.53	0.15	0.25	0.00
On-Site Lower Unit Wells	1.6	0.08	0.25	0.00
Future Adult Resident				
On-Site Upper Unit Wells	0.34	0.10	N/A	N/A
On-Site Lower Unit Wells	1.04	0.06	N/A	N/A

ND - Not Detected or not chosen as a chemical of con

TABLE 6-3
CARCINOGENIC RISK

	EXPOSURE PATHWAYS			
	INGESTION OF GROUNDWATER	NON-INGESTION OF GROUNDWATER	DERMAL CONTACT WITH SURFACE WATER	DERMAL CONTAC WITH SEDIME
	Current Resident (Child, Youth, and Adult)			
On-Site Upper Unit Wells	2.4E-06	N/A	8.2E-07	2.7E-0
On-Site Lower Unit Wells	2.8E-06	1.4E-06	8.2E-07	2.7E-0
Off-Site Upper Unit Wells	ND	ND	8.2E-07	2.7E.0
Off-Site Lower Unit Wells	N/A	N/A	8.2E-07	2.7E.0

ND - Not Detected or not chosen as a chemical of con
N/A - Not applicable

TABLE 6-4
TERRESTRIAL LIFE ECOLOGICAL RISK

	Least Shrew	Chipping Sparrow	Aquatic Life	Plants
Aluminum	X	X		X
Barium		X		
Chromium		X	X	
Copper		X	X	X
Iron	X	X	X	X
Lead			X	
Nickel			X	
Vanadium	X	X		
Zinc		X X		
Bis(2-ethylhexy1) phthalate			X	
Diethylphthalate			X	
Dimethylphthalate			X	
Heptachlor			X	
Pentachlorophenol			X	
Pyrene			X	

X - Denotes that the concentration of a particular chemical present at this Site poses a potential risk for the corresponding terrestrial wildlife.

Although the Site poses a potential threat to ecological life, the limited data collected during the Remedial Investigation does not justify remediation at this time. Additional sampling will be performed during the Remedial Design to confirm this position. Remedial action will be performed should sampling results indicate such a need.

7.0 REMEDIAL ALTERNATIVES

The Feasibility Study (FS) utilized the presumptive remedy approach for municipal landfills. Title 40 C.F.R. Section 300.430(a)(iii)(B) of the NCP contains the expectation that engineering controls, such as containment, will be used where treatment is impracticable. The preamble to the NCP identifies municipal landfills as a type of Site where treatment of the waste may be impracticable because of the size and heterogeneity of the contents (55 Federal Register 8704, 1990). Because treatment is usually impracticable for a landfill, EPA considers containment to be the appropriate response action, or the "Presumptive Remedy". The presumptive remedy for CERCLA municipal landfill sites relates primarily to containment of the landfill mass and collection and/or treatment of landfill gas. Other measures to control leachate, affected groundwater, and/or upgradient groundwater that are causing saturation of the landfill mass may also be implemented as part of the presumptive remedy. The presence of concentrated waste areas, or "Hot Spots" would require additional characterization, however, no hot spots were present at this Site. Use of the presumptive remedy also eliminates the need for the initial identification and screening of alternatives during the feasibility study.

Based on the FS, Baseline Risk Assessment, and Applicable or Relevant and Appropriate Requirements (ARARs), the Remedial Action Objectives (RAOs) listed below were established for the Site. Alternatives were developed with the goal of attaining these Remedial Action Objectives:

- Prevent ingestion of groundwater containing any carcinogen concentrations above Federal or State ARARs, or if there is no established ARAR, above levels which would allow a remaining excess cancer risk greater than 10-6 to 10-4.
- Prevent ingestion of groundwater containing any non-carcinogen concentrations above Federal or State ARARs, or if there is no established ARAR, above levels which would allow an unacceptable remaining non-carcinogenic threat (HI equal to or greater than 1.0).
- Prevent the migration of contaminated groundwater to surface waters.
- Prevent inhalation of and explosion potential from landfill gas
- Prevent direct and dermal contact with, and ingestion of contaminated landfill contents.
- Prevent on-Site inhalation and dermal adsorption of Site-related contaminants, and migration of leachate to surface waters.
- Determine extent of contaminant concentrations in the surface water and sediment.
- Determine impact to ecological life.

7.1 Description of Remedial Alternatives

The technologies identified were evaluated on the basis of effectiveness and implementability criteria. Table 7-1 lists those technologies and outlines the components of each of the four (4) remedial alternatives proposed for remediation. All alternatives include sampling to monitor contaminated groundwater. Additionally, all of the alternatives include Five (5) Year Reviews to be conducted during the assumed Thirty (30) year Operations & Maintenance period. The "O&M cost" included for each alternative refers to the costs of operating and maintaining the treatment described in the alternative, for an assumed period of Thirty (30) years.

TABLE 7-1
DESCRIPTION OF ALTERNATIVES

1. No Action/Monitoring	$1,408,553
2. Containment/Gas Recovery/ Institutional Controls/Monitoring	$6,081,822
3. Containment/Gas Recovery/Groundwater Extraction and Treatment/Institutional Controls/Monitoring	
a. Groundwater treatment at POTW	$6,466,967
b. Groundwater treatment with disposal by land irrigation	$6,745,293
4. Consolidation/Containment/Gas Recovery/Groundwater Extraction and Treatment and Disposal/Monitoring	
a. Groundwater treatment at POTW	$8,332,509
b. Groundwater treatment with disposal by land irrigation	$8,610,836

7.2.1 Alternative 1:

The No Action/Monitoring alternative is retained as the baseline case for comparison with other alternatives. No remedial actions would be performed on the media of concern at the Site. The entire Site, as defined during the RI, would remain in its present condition.

Under the no action/monitoring alternative, no further action would be taken to contain the refuse at the Site or control the migration of landfill gas and groundwater. However, scheduled maintenance of existing cap and operation of the gas extraction system could continue. A monitoring program would be established to monitor surface water, groundwater and landfill gas. A 30-year performance period is commonly used as the maximum performance period for no action alternatives or in cases where the performance period cannot be accurately estimated. It is assumed that the frequency of monitoring will be quarterly for two years and then semi-annually thereafter. It is noted that the Site monitoring program is the same for all of the alternatives.

The monitoring program would be reevaluated every five (5) years to assess the appropriateness of the sampling program. Because hazardous contaminants would remain on-Site, five year reviews would be required under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c).

Capital Costs:	$ 190,080
Annual O&M Costs:	$ 105,500
Total Present Worth Costs:	$ 1,408,553

7.2.2 Alternative 2:

In this alternative the Old Cayce Dump and the Bray Park Dump would be capped. The existing cap present at the 321 Landfill would be modified by including a Geosynthetic Clay Liner (GCL) and increasing the existing agricultural soil layer to eighteen (18) inches. The small refuse area between Old Cayce Dump and Bray Park Dump and miscellaneous refuse spread across portions of the Site would be consolidated into the Bray Park Dump and capped. Deed restrictions would also protect the integrity of the caps.

The cover for the 321 Landfill would be designed to include a system to passively collect landfill gas in the event that the existing gas collection system is discontinued. Other passive vents would be installed as needed to minimize the accumulation of gasses along Route 321 where elevated methane readings have been measured.

An extensive network of surface water improvements would be constructed to minimize erosion of the cover systems and manage surface water runoff at the Site. The 321 Landfill improvements would be modified to include a perimeter drainage swale between the upper portion of the 321 Landfill and the toe. The perimeter swale would be connected to down-slope ditching which would tie into a perimeter ditching and conveyance system at the toe of the 321 Landfill. This ditch would be connected to one or more surface water detention/sedimentation ponds which would discharge to existing off-Site drainage features via a culvert or ditch. Surface water runoff from Route 321 and the southwest side of the 321 Landfill would be diverted around the southwest side of the Old Cayce Dump.

To address potential exposure to groundwater within the Site boundaries, deed restrictions would limit the use of groundwater and would apply until monitoring results indicated that applicable drinking water standards had been attained. See Section 10.2.2. If groundwater supplying currently used private wells of downgradient residents or businesses were to become impaired due to migration of contaminants from the Site, an alternative source of water may be necessary. If future sampling results indicated the potential for such an impact, EPA would notify those individuals and businesses not currently connected to city water that may be affected. EPA and/or Lexington County would also notify the owners of any known abandoned wells that may be impacted by such migration. Groundwater, surface water, and landfill gas monitoring for this alternative would be the same as for Alternative 1.

Capital Costs:	$ 3,555,860
Annual O&M Costs:	$ 137,826
Total Present Worth Costs:	$ 6,081,822

7.2.3 Alternative 3:

Alternative 3 will include all of the components of Alternative 2 but will also include groundwater extraction, treatment and disposal. This alternative includes two groundwater treatment and disposal options identified in 3a and 3b. Under Alternative 3a, groundwater would be extracted and conveyed to the local POTW for treatment and disposal. Alternative 3b includes on-Site treatment and land application of treated groundwater. In both options, groundwater remediation is limited to the Upper Unit because sufficient data are not available to assess the extent of contamination in the Lower Unit which might require remediation. Information will be collected during the Remedial Design to determine if the contamination in the Lower Unit is the result of poor well construction or a result of system flow. If contaminants are migrating from the Upper Unit into the Lower Unit as a result of system flow, then the extraction system will be modified to include remediation of the Lower Unit.

Alternative 3a would include conveying the extracted groundwater to the City of Cayce POTW, located approximately three miles east of the Site. Under this alternative, groundwater would be collected in a force main which would connect with an existing force main located approximately 0.5 mile east of the Site. Pump stations would be required to transport the water through the pipeline to the POTW. The water would be treated at the POTW and discharged to surface water under the POTW's NPDES permit. If necessary, the extracted groundwater would receive pretreatment prior to transportation to the POTW. This option would require a pretreatment permit for the Site and monitoring and reporting would be performed to comply with the permit requirements as needed.

Capital Costs:	$ 3,837,460
Annual O&M Costs:	$ 140,386
Total Present Worth Costs:	$ 6,466,967

Alternative 3b would include conveying the extracted groundwater to an on-Site treatment system. The objective of the treatment would be to reduce chemical concentrations in groundwater to levels that would meet land application criteria. The water would be applied using an irrigation system to maintain vegetation on the Site cover or to other vegetated areas of the Site. It is estimated that between 40 to 80 acres of land would be required to dispose of the treated effluent. The level of treatment for land application is generally less stringent than required under other disposal options because the soil that the water is applied to has the capacity to further treat the water prior to it reaching the water table. During wet periods, treated water may require storage in on-Site holding ponds to minimize runoff of water. This water would then be applied to the ground at a later time using the irrigation system.

Capital Costs:	$ 4,040,960
Annual O&M Costs:	$ 142,236
Total Present Worth Costs:	$ 6,745,293

7.2.4 Alternative 4:

Alternative 4 is the same as Alternative 3 except that it includes consolidation of the Old Cayce Dump with the Bray Park Dump. The Old Cayce Dump is considered a candidate for consolidation because it is located in a groundwater discharge zone. Under these conditions, the refuse is partially saturated with groundwater and may be an ongoing source of groundwater contamination and/or surface water contamination (due to groundwater discharge) for an extended period of time. Consolidation would be accomplished using standard techniques such as track-mounted excavators or drag line equipment. The excavated material could be temporarily stockpiled on-Site prior to consolidation or placed directly in one of the other refuse areas. The area where the refuse consolidation occurs would then be capped. The area of excavation would be backfilled and covered with top soil.

Alternative 4a would be the same as Alternative 3a except it would include the consolidation described above.

Capital Costs:	$ 5,201,460
Annual O&M Costs:	$ 152,786
Total Present Worth Costs:	$ 8,332,509

Alternative 4b would be the same as Alternative 3B except it would include the consolidation described above.

Capital Costs:	$ 5,404,960
Annual O&M Costs:	$ 154,636
Total Present Worth Costs:	$ 8,610,836

8.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The four alternatives were evaluated based upon the nine (9) criteria set forth in 40 C.F.R. § 300.430(e)(9) of the NCP. In this section, brief summaries of how the alternatives were judged against these nine criteria are presented. Also included is a description of the criteria.

8.1 Threshold Criteria

Implementation of an alternative must result in attainment of the following two (2) threshold criteria before it can be selected.

1. Overall protection of human health and the environment addresses whether the alternative will adequately protect human health and the environment from the risks posed by the Site. Included in judgement of compliance with this criterion is an assessment of how and whether the risks will be properly eliminated, reduced, or controlled through treatment, engineering controls, and/or institutional controls.

Alternative 1 (No Action) would not achieve protection of human health and the environment. Risks identified in the Baseline Risk Assessment would continue to exist. Alternative 2 (Containment) would produce limited protection by preventing human contact with contaminated groundwater by restricting aquifer and property usage. Alternative 3 (Containment/Groundwater Extraction) would achieve a moderate degree of protection. Further migration of the groundwater contaminants would be prevented, and groundwater would be extracted and discharged to POTW or treated on-Site for land application. Alternative 4 (Containment/Groundwater Extraction/Consolidation) would provide the highest degree of protection by reducing the volume of waste in contact with groundwater thereby reducing the amount of contamination leaching to groundwater .

2. Compliance with applicable or relevant and appropriate requirements (ARARs) addresses whether an alternative will meet all of the requirements of Federal and State environmental laws and regulations and/or justifies a waiver from an ARAR. The specific ARARs which will govern the selected remedy are listed and described in Section 10, Selected Remedy. Section 10 includes a discussion of chemical-specific and action-specific ARARs. There are no known location-specific ARARs for the Site.

Alternatives 1 and 2 would not meet their respective groundwater ARARs, specifically the MCLs, at the completion of the remedial activities. Alternatives 3 and 4 involve an extraction scheme which would recover and treat groundwater, therefore achieving compliance with the groundwater ARARs.

8.2 Primary Balancing Criteria

Five (5) criteria were used to weigh the strengths and weaknesses among alternatives, and to select one of the alternatives, once the threshold criteria were met.

1. Long term effectiveness and permanence refers to the ability of the alternative to maintain reliable protection of human health and the environment over time, once the remediation goals have been met.

Alternatives 1 (No Action) and 2 (Containment) would not meet this criterion. Contamination levels for groundwater would not be adequately addressed. Alternatives 3 and 4 would achieve and maintain a high degree of effectiveness and permanence. If implemented successfully, Alternative 4 (Consolidation of Old Cayce Dump with the Bray Park Dump) would achieve the highest degree of effectiveness and permanence through removal of waste which acts as a source of contamination to groundwater.

2. Reduction of toxicity, mobility, or volume addresses the anticipated performance of the treatment technologies that an alternative may employ. The 1986 amendment to CERCLA, the Superfund Amendments and Reauthorization Act (SARA), directs that, when possible, EPA should choose a treatment process that permanently reduces the level of toxicity of site contaminants, eliminates or reduces their migration away from the site, and/or reduces their volume on a site.

Alternatives 1 (No Action) and 2 would not meet this criterion since no treatment would occur. Alternatives 3 (Groundwater Treatment) and 4 (Consolidation) would achieve varying degrees of mobility and toxicity reduction. Because EPA considers containment to be the appropriate response action for the landfill mass and collection and/or treatment of landfill gas, none of the alternatives were intended to reduce waste volume.

3. Short-term effectiveness refers to the length of time needed to achieve protection, and the potential for adverse effects to human health or the environment posed by implementation of the remedy, until the remediation goals are achieved.

Of the alternatives that achieve chemical-specific ARARs (Alternatives 3 and 4), Alternative 3 (Groundwater Treatment) affords the greatest level of short-term protection because it presents the least disturbance to the Site. Alternative 4 could release amounts of volatile emissions during consolidation but should be manageable through standard construction practices.

4. Implementability considers the technical and administrative feasibility of an alternative, including the availability of materials and services necessary for implementation.

Implementation is not a concern for Alternative 1 (No Action), since no actions would be implemented. The remaining alternatives are implementable using proven technologies. The services and materials required for these alternatives would be readily available on relatively short notice.

5. Cost includes both the capital (investment) costs to implement an alternative, plus the long-term O&M expenditures applied over a projected period of operation. The total present worth cost for each of the five (5) alternatives is presented in Table 7-1. Of the alternatives that achieve chemical-specific ARARs (Alternatives 3 and 4), Alternative 3a is the least costly alternative.

8.3 Modifying Criteria

State acceptance and community acceptance are two (2) additional criteria that are considered in selecting a remedy, once public comment has been received on the Proposed Plan.

1. State acceptance: The State of South Carolina concurs with the selection of Alternative 4a, the preferred alternative outlined in the proposed plan. South Carolina's letter of concurrence is provided in Appendix A to this ROD.

2. Community acceptance During the Proposed Plan public meeting, held on April 14, 1994, EPA presented its preferred alternative, Alternative 4a, for the remediation of the Site. The public comment period opened on April 6, 1994, and closed on June 6, 1994. Comments expressed at the public meeting are addressed in the Responsiveness Summary attached as Appendix B to this ROD.

9.O THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives and public and state comments, EPA has selected a remedy that addresses contamination at this Site. The selected remedy for this Site is Alternative 4a: Consolidation/Containment/Gas Recovery/Groundwater Extraction and Treatment and Disposal at POTW/Monitoring.

This alternative will include excavation of Old Cayce Dump, waste area Number 3, and miscellaneous refuse spread across portions of the Site for consolidation with the Bray Park Dump. Since consolidation will take place within the same area of contamination (AOC), such consolidation will not constitute placement of wastes under RCRA and will not, therefore, trigger RCRA Land Disposal Restrictions (40 CFR Part 268). Consolidation will remove the portion of waste located within the groundwater discharge area thereby reducing the source of

contamination for the groundwater.

Following consolidation, this waste area will be capped and the surface of the cap contoured or terraced to address erosion problems. The existing cap present at the 321 Landfill will be modified as follows:

1) A Geosynthetic Clay Layer (GCL) will be added to the existing cover. The existing agricultural layer will be increased to eighteen (18) inches to support vegetative growth.

2) The surface terrain will be designed in a manner to reduce soil erosion beyond current levels. Permanent engineered run-on and run-off systems shall be constructed as a part of the cap/cover system. The run-on and run-off controls shall be designed for at least a fifty (50) year rainfall event.

The cap design for the Old Bray Park Dump, to include the consolidated waste area, will meet or exceed the performance standards of the modified cap design for the 321 Landfill in terms of ability to reduce infiltration. Capping should greatly reduce the volume of rainfall infiltration into the waste disposal areas thereby minimizing the production of leachate and/or contaminated groundwater. Capping will also prevent direct-and dermal contact with, and ingestion of, contaminated waste disposal area contents. Deed restrictions limiting both the disturbance of the cap and the use of groundwater beneath the 321 Landfill would also further protect the integrity of the cap.

A groundwater/leachate collection system will be installed to intercept and collect contaminated liquids migrating from the Site. This will prevent contaminated liquids from migrating to off-Site groundwater and/or discharging into surface waters at concentrations above acceptable health and ecological levels. To address potential exposure to groundwater within the Site boundaries, deed restrictions would limit the use of groundwater and would apply until monitoring results indicated that applicable drinking water standards had been attained. Private landowners with known abandoned wells that may be affected by any groundwater migration from the Site would also be notified. As part of the Remedial Design, sufficient additional groundwater, surface water, and sediment data shall be collected to achieve the following objectives:

A. Verify the extent of contamination present in the lower aquifer. This will include identifying how contaminated groundwater from the upper aquifer is migrating into the lower aquifer. Information will be collected during the Remedial Design to determine if the contamination in the Lower Unit is the result of poor well construction or a result of system flow. If contaminants are migrating from the Upper Unit into the Lower Unit as a result of system flow, then the extraction system will be modified to include remediation of the Lower Unit.

B. Delineate the extent of contamination in the surface water and sediment. This will include identifying the sources and pathways for contaminant migration into the on-Site tributaries.

C. Determine the ecological impact from contaminated surface water and sediments.

A landfill gas extraction system operates on an intermittent basis at the 321 Landfill. Operation of the existing system is expected to continue for the foreseeable future, but the cover for the waste disposal areas will be designed to include gravel trenches to passively collect landfill gas in the event that the current operation ceases. The vent pipes installed within the modified 321 Landfill cap would be utilized to collect the gas once the current landfill gas extraction system is no longer operational. Other passive vents will be installed as needed to minimize the accumulation of gasses along Route 321 where elevated LEL readings have been measured. This system would prevent inhalation and explosion potential from landfill gas.

9.1 Waste Performance Standards

The Old Cayce Dump contains a variety of wastes. The remediation objective for this waste disposal area is to control the migration of contaminants from the waste and fill material to

the surrounding groundwater by excavation, consolidation/containment of the waste material.

During the Remedial Action process, the areal limits of the debris excavation shall be determined by visual observation. Soil sampling will then be performed within the excavated area. Criteria governing a decision concerning acceptable excavation levels will be considered during the Remedial Design.

9.2 Groundwater Performance Standards

Groundwater concentrations protective of human health and the environment were based on MCLs or the Site-specific risk calculations from the Baseline Risk Assessment. The groundwater remediation goals below shall be the performance standards for groundwater extraction/ remediation. Groundwater shall be extracted until these maximum concentration levels are attained. The following groundwater cleanup goals are based on State and Federal standards, referred to as Maximum Contaminant Levels (MCLs).

ORGANICS	CLEANUP GOALS
Benzene	5 ug/1
Bis(2-ethylhexyl)phthalate	4 ug/1
Bromodichloromethane	100 ug/1
1,4-Dichlorobenzene	75 ug/1
1,1-Dichloroethene	7 ug/1
1,2-Dichloroethane	5 ug/1
Methylene Chloride	5 ug/1
Tetrachloroethene	5 ug/1
Trichloroethene	5 ug/1
Vinyl Chloride	2 ug/1

INORGANICS	CLEANUP GOALS
Arsenic	50 ug/1
Beryllium	4 ug/1
Chromium	100 ug/1
Nickel	100 ug/1
Cadmium	5 ug/1
Barium	2000 ug/1

The following groundwater cleanup levels are based upon toxicological data reviewed by EPA for contaminants which do not have MCLs. These cleanup levels are protective of human health under the most stringent exposure scenario; future potential ingestion of contaminated groundwater by a child. These cleanup levels are:

INORGANICS	CLEANUP GOALS
Lead	15 ug/1*
Manganese	180 ug/1
Vanadium	70 ug/1
Zinc	3000 ug/1

* The level for lead is an action level and is not an MCL nor a PRG.

These cleanup levels are based upon Preliminary Remediation Goals (PRGs) identified in the FS, adjusted for exposure to a child. The PRGs presented in the FS for vanadium (256 ug/1) and zinc (11,000 ug/1) were initially derived for an adult.

9.3 Compliance Testing

The selected remedy will include groundwater extraction for an undetermined period, during which the system's performance will be carefully monitored on a regular basis and adjusted as warranted by the performance data collected during operation. Modification may include any or all of the following:

- discontinuation of pumping at individual wells where cleanup goals have been attained;

- alternation of pumping at wells to eliminate stagnation points;

- pulse pumping to allow aquifer equilibration and encourage adsorbed contaminants to partition into groundwater; and

- installation of additional extraction wells to facilitate or accelerate cleanup of the contaminant plume.

To insure that cleanup goals continue to be attained, the aquifer will be monitored at those wells where pumping has ceased on a regular periodic basis, following discontinuation of groundwater extraction. The intervals between groundwater sampling/analysis events will be established in the Remedial Action Work Plan.

The decision to invoke any or all of these measures may be made during a periodic review of the remedial action (Five Year Review), which will occur at five year intervals in accordance with CERCLA Section 121(c), 42 U.S.C. § 9621(c).

9.4 Monitor Site Groundwater and Surface Water

Beginning with initiation of the Remedial Design, groundwater and surface water samples shall be collected and analyzed on a regular schedule as described in Section 7.2.1. Analytical parameters for groundwater and surface water samples will include the known Site contaminants of concern. The specific wells to be sampled and methodology for sample collection will be determined during remedial design. Surface water samples will be collected, at a minimum, from the unnamed tributary at one upstream location and one downstream location as necessary to monitor the contamination. The analytical data generated from the sampling events established for groundwater will be used to track the concentrations and movement of groundwater contaminants until a long-term Site monitoring plan is implemented in the remedial action phase.

10.0 STATUTORY DETERMINATIONS

The selected remedy for this Site meets the statutory requirements set forth at Section 121 of CERCLA, 42 U.S.C. § 9621. This section states that the remedy must protect human health and the environment; meet ARARs (unless waived); be cost-effective; use permanent solutions, and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and finally, wherever feasible, employ treatment to reduce the toxicity, mobility or volume of the contaminants. The following section discusses how the remedy fulfills these requirements.

10.1 Protection of Human Health and the Environment

The selected remedy will eliminate, reduce, or control risks posed through each pathway by means of treatment and implementation of engineering controls and deed restrictions and thus ensure adequate protection of human health and the environment. Potential risks will be either eliminated, reduced, or controlled by the remedial action.

The installation of a cap will minimize the amount of leachate generated and will place a barrier between the contaminated waste disposal areas and the surface soils such that surface water will not be allowed to percolate through the contaminated waste disposal areas. The installation of a groundwater collection system will contain contaminated groundwater plume and leachate preventing their migration off-Site.

The existing methane gas recovery system will be expanded to contain all portions of the methane plume which presents an unacceptable risk. During the remedial design the methane plume will be further delineated.

Site future risks will be reduced to within the 10-6 to 10-4 range for carcinogens and the Hazard Indices total for non-carcinogens will be less than 1.0.

10.2 Applicable or Relevant and Appropriate Requirements (ARARs)

ARARs are "applicable" requirements, intended to specifically address a site or circumstances found at a site and "relevant and appropriate" requirements that, while not legally applicable to the site, address situations sufficiently similar to those encountered at a site, such that their use is well suited to the site. See 40 C.F.R. Section 300.5. Thus, when establishing criteria for ensuring the proper implementation of a remedial action, EPA and the State of South Carolina have agreed to consider a number of procedures that are relevant and appropriate, if not legally applicable.

10.2.1 Consolidation/Gas Recovery

The selected alternative consists of closure of the formerly permitted 321 Landfill in accordance with SCDHEC and RCRA regulations governing Subtitle D landfill closures, along with a sampling program to monitor groundwater, surface water, and landfill gas. Alternative 4a is designed to meet the applicable or relevant and appropriate requirements (ARARs). The Federal ARARs include the Resource Conservation and Recovery Act (RCRA) (42 USCA Section 6901 et seq and 40 CFR Part 264) and the Clean Air Act (42 USCA Section 7401 et seq and relevant sections of 40 CFR Part 50 and 61).

Title 40 C.F.R. Section 264.310, promulgated pursuant to RCRA, specifies the performance-based requirements for a cover at completion of landfill construction. The cover system for the landfill will be a cap and cover system as described in 40 C.F.R. Sections 264.117 through 264.120, 264.228(a), 264.310(a) and 264.310(b) and will comply with the relevant and appropriate RCRA regulations. Thus the cap will minimize migration of liquid through the landfill, function with minimum maintenance, promote surface drainage, minimize erosion, minimize leachate generation, accommodate settling, and be less than the permeability of natural subsoils present. Surface water control addressing run-on and run-off are outlined in 40 C.F.R. Sections 264.251, 264.273, and 264.301 and would also be considered relevant and appropriate.

After construction is completed, the substantive monitoring and maintenance requirements contained in 40 C.F.R. Section 264.117 through 264.120 will be conducted. After the closure activities have concluded, a survey plat, as prescribed in 40 C.F.R. Section 264.116, indicating the location and dimensions of the disposal area will be submitted to the local zoning authority, or to the authority with jurisdiction over local land use, and to EPA Region IV. Title 40 C.F.R. Sections 264.117(c) and 264.258 addresses post-closure care use of property to prevent damage to the cover and would be considered relevant and appropriate.

The Clean Air Act (CAA) identifies and regulates pollutants that could be released during earth-moving activities associated with the consolidation of waste disposal areas. Section 109, of the CAA outlines the pollutants for which National Air Quality Standards (NAAQS) have been established. Section 112, of the CAA, identifies pollutants for which there are no pertinent Ambient Air Quality Standards. The CAA, Sections 109 and 112, is an ARAR and will be complied with during implementation of the selected remedy and would be considered applicable for this Site. Section 101 of the CAA would be applicable as it serves as the basis for odor regulations from air pollution emissions. Title 40 C.F.R. Parts 52 and 61 would also be applicable by requiring an estimation of emission rates for each pollutant expected, and verification that emissions of mercury, vinyl chloride, and benzene do not exceed hazardous air pollution regulations. SC Reg. 61-62, South Carolina Air Pollution Control Regulations and Standards, promulgated pursuant to the S.C. Pollution Control Act, SC Code of Laws, 1976, as amended would also apply to this Site.

If drums or other hazardous material are discovered during the consolidation of the waste disposal areas, the hazardous material would be transported off-Site for disposal. Title 49 C.F.R. Parts 107, 171-179, promulgated under the authority of the Hazardous Materials Transportation Act would be applicable in regulating the labeling, packaging, placarding, and transport of hazardous materials off-Site.

Title 40 C.F.R. Parts 261.3 and 262.20, promulgated under the authority of the Resource Conservation and Recovery Act which govern the identification, transportation, and manifesting requirements of hazardous wastes in addition to closure and groundwater monitoring requirements would be considered applicable to this Site. The land disposal restrictions in 40 C.F.R. Part 268.8 and South Carolina Hazardous Waste Management Regulations 61-79.268 would not apply in consideration of Corrective Action Management Units Sections 260.10 and 270.2.

Title 40 C.F.R Section 403.5 requires that pollutants which are discharged to a POTW will require a pretreatment permit and would be considered applicable to this Site. Specific prohibitions will also apply to the discharge of pollutants in a POTW. Discharge of treated groundwater to the POTW shall comply with all applicable industrial pretreatment standards, as well as any other effluent standards or limits established by EPA.

10.2.2 Groundwater

Groundwater remediation shall comply with all noted applicable portions of the following Federal and State of South Carolina regulations:

SC Reg. 61-58, South Carolina Primary Drinking Water Regulations, promulgated pursuant to the Safe Drinking Water Act, SC Code of Laws, 1976, as amended. These regulations are relevant and appropriate as remediation criteria.

40 C.F.R. § 403.5, CWA Pretreatment Standards (CWA § 307), promulgated under the authority of the Clean Water Act regulates discharges of water to POTWs and would be applicable to this Site.

SC Reg., Section G of 61-68, Class Descriptions and Specific Standards for Groundwaters, South Carolina Water Classifications and Standards, promulgated pursuant to the Pollution Control Act, SC Code of Laws, 1976, as amended. These regulations establish classifications for water use, and set standards for protecting state groundwater.

SC Reg. 61-71, South Carolina Well Standards and Regulations, promulgated under the Safe Drinking Water Act, SC Code of Laws, 1976, as amended. Standards for well construction, location and abandonment are established for remedial work at environmental or hazardous waste sites.

40 C.F.R. Parts 141-143, National Primary and Secondary Drinking Water Standards, promulgated under the authority of the Safe Drinking Water Act establishes acceptable maximum levels of numerous substances in public drinking water supplies. Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) are specifically identified in the NCP as remedial action objectives for groundwater that is a current or potential source of drinking water supply (NCP 40 C.F R. § 300.430(a)(1)(ii)(F). Therefore, MCLs and MCLGs are relevant and appropriate as criteria for groundwater remediation at this Site.

40 C.F.R. Part 50, promulgated under the authority of the Clean Air Act. This regulation includes the National Ambient Air Quality Standards (NAAQS), and establishes a national baseline of ambient air quality levels. The state regulation which implements this regulation, South Carolina Reg. 62-61, is applicable to the consolidation/containment/gas control/ and groundwater portion of the remedy.

Various materials to be considered (TBC) were utilized in the Baseline Risk Assessment and in the Feasibility Study. Because cleanup standards were established based on these documents, they are considered TBC. In the Baseline Risk Assessment, TBC material included information concerning toxicity of, and exposure to, Site contaminants. TBC material included the Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST), and other EPA guidance as specified in the Baseline Risk Assessment. Other TBC material include the following:

National Oceanic and Atmospheric Administration (NOAA) ER-L/ER-M Values include guidelines that were developed as screening criteria for sediment contamination in surface water bodies, and are based on toxicity to aquatic life.

Revised Procedures for Planning and Implementing Off-Site Response Actions, OSWER Directive 9834.11, June 1988. This directive, often referred to as "the off-S1te policy," requires EPA personnel to take certain measures before CERCLA wastes are sent to any facility for treatment, storage, or disposal. EPA personnel must verify that the facility to be used is operating in compliance with § 3004 and § 3005 of RCRA, as well as all other Federal and State regulations and requirements. Also, the permit under which the facility operates must be checked to ensure that it authorizes (1) the acceptance of the type of wastes to be sent, and (2) the type of treatment to be performed on the wastes.

Guidelines for Ground Water Use and Classification, EPA Ground Water Protection Strategy, U. S. EPA, 1986. This document outlines EPA's policy of considering a Site's groundwater classification in evaluating possible remedial response actions.

All on-Site excavation work shall comply with 29 C.F.R. § 1910.120, the OSHA health and safety requirements applicable to remedial activities. All treatment and disposal shall comply with applicable or relevant and appropriate requirements (ARARs), as cited above.

Remedial design often includes the discovery and use of unforeseeable, but necessary, requirements, which result from the planning and investigation inherent in the design process itself. Therefore, during design of the source control or groundwater component of the selected remedy, EPA may, through a formal ROD modification process such as an Explanation of Significant Differences or a ROD Amendment, elect to designate further ARARs which are applicable, or relevant and appropriate, to this remedy.

10.3 Cost effectiveness

Among the alternatives that are protective of human health and the environment and comply with ARARs, the selected alternative is the most cost-effective choice because it uses a treatment technology to address the waste disposal area which is acting as a source of contamination for the groundwater. This approach will reduce the volume of groundwater that will need to be treated.

The selected remedy is cost-effective because it has been determined to provide overall effectiveness proportioned to its costs (present worth = $8,332,509). Table 7-1 compares estimated costs associated with all four alternatives. Alternative 4 is the only alternative that will actively reduce the generation of leachate and contaminated groundwater. Alternative 4a is the most cost-effective choice because the use of the POTW option is the most cost-effective means to dispose of the treated groundwater.

10.4 Utilization of permanent solutions, and alternative treatment technologies or resource recovery technologies to the maximum extent practicable:

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner.

Based upon the information presented, the selected remedy will protect surface water and groundwater quality by reducing infiltration and leachate production. It provides the best balance among all nine (9) evaluation criteria, with the following being the most important considerations for the Site:

1. Compliance with applicable or relevant and appropriate requirements for solid waste landfill closure;

2. Availability of equipment and materials;

3. Cost of construction, O & M;

4. Elimination of rain water infiltration and, thus, reduction in the volume of leachate and contaminated groundwater released to the environment; and,

5. Continued monitoring to ensure the remedy continues to be protective of human health and the environment.

10.5 Preference for treatment as a principal remedy element:

The selected remedy does not satisfy the statutory preference for treatment because treatment of landfill waste, other than groundwater and leachate, is considered impractical. The remedy does not include treatment of any contaminated landfill waste matrix. Treatment of the source of contamination (the entire waste disposal areas) is technically impracticable, because of the large volume of material, the known heterogeneity of the material, and the low average contaminant concentrations believed to be present. The feasibility of treating isolated, heavily contaminated areas is in question, because the nature and extent of anomalous

contamination within the fill area has not been quantified and would be very difficult {and costly) to quantify.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan was released for public comment in April 1994. It identified Alternative 4a, Consolidation/Containment/Gas Recovery/Groundwater Extraction and Treatment and Disposal at POTW as the preferred alternative. This alternative involved capping the 321 Landfill with an Flexible Membrane Liner to reduce infiltration of water. During the public comment period, new information indicated that the use of a Geosynthetic Clay Liner would be more efficient and cost effective in preventing infiltration while achieving the same results. In addition, supplemental watering would be critical for maintaining a vegetative cover on the capped areas. A portion of the recovered groundwater will be pretreated and then utilized to maintain vegetative cover.

APPENDIX A

STATE OF SOUTH CAROLINA

LETTER OF CONCURRENCE

South Carolina
D H E C
Department of Health and Environmental Control
2600 Bull Street, Columbia, SC 29201

September 20, 1994

John H. Hankinson, Jr.
Regional Administrator
U.S. EPA, Region IV
345 Courtland Street
Atlanta, GA 30365

RE: Lexington County Landfill Superfund Site - Record of Decision

Dear Mr. Hankinson:

The Department has reviewed the Draft Record of Decision (ROD), dated September 1, 1994, for the Lexington County Landfill site and concurs with the selected remedial alternative. In concurring with this ROD, the South Carolina Department of Health and Environmental Control (SCDHEC) does not waive any right or authority it may have under federal or state law. SCDHEC reserves any right and authority it may have to require corrective action in accordance with the South Carolina Hazardous Waste Management Act and the South Carolina Pollution Control Act. These rights include, but are not limited to, the right to ensure that all necessary permits are obtained, all clean-up goals and criteria are met, and to take a separate action in the event clean-up goals and criteria are not met. Nothing in the concurrence shall preclude SCDHEC from exercising any administrative, legal and equitable remedies available to require additional response actions in the event that: (1)(a) previously unknown or undetected conditions arise at the site, or (b) SCDHEC receives additional information not previously available concerning the premises upon which SCDHEC relied in concurring with the selected remedial alternative; and (2) the implementation of the remedial alternative selected in the ROD is no longer protective of public health and the environment.

The State concurs with the selected source remediation alternative of consolidation and capping of the waste areas with deed restrictions for protection of the cap and the restriction of groundwater use beneath the site for drinking purposes, and with the selected groundwater remediation alternative of extraction, pretreatment, if necessary, and discharge to the local POTW. In addition, the State concurs with the decision to collect and vent methane gas. The State also concurs with the proposals for additional sampling of surface water and sediment, and for monitoring of groundwater, surface water, sediment, and landfill gas to determine the effectiveness of the remedial action.

State concurrence on this remedial alternative is based on the alternative meeting all applicable clean-up criteria. Concurrence is also contingent upon the results of the additional investigative work to be completed during the Remedial Design phase. Depending on the results of the investigative work, an Explanation of Significant Differences (ESD) and/or ROD Amendment may be required. An ESD and/or ROD Amendment would require State concurrence.

Sincerely,
R. Lewis Shaw, P.E.
Deputy Commissioner
Environmental Quality Control

cc: Hartsill Truesdale
Keith Lindler
Gary Stewart
Jim Bowman
Lewis Bedenbaugh

APPENDIX B

RESPONSIVENESS SUMMARY

LEXINGTON COUNTY LANDFILL AREA SUPERFUND SITE

10.0 THE RESPONSIVENESS SUMMARY

10.1 OVERVIEW

During the April 14, 1994, public meeting, EPA presented the Proposed Plan and solicited questions from the public. Community interest has been significant following the decision by the Lexington County Council to finance the RI/FS. Citizens have been and continue to be concerned about the quality of groundwater and surface water associated with the Site.

10.2 RESPONSES TO COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

Comment No. 1: The newspaper announcement appearing in The State, April 6, 1994, indicated that the Administrative Record was available for review at the R.M. Smith Branch Library.

EPA Response to Comment: The correct location was, and still is, the Cayce-West Columbia Library. The Proposed Plan fact sheet mailed on April 8, 1994, did indicate the correct library. An announcement was also made during the public meeting on April 14, 1994, to address this error.

Comment No. 2: One resident felt that the list of PRPs was available only upon specific request from EPA.

EPA Response to Comment: The list of potentially responsible parties has been available at the information repository since July 9, 1992. This list was also mentioned during the public information meeting held on July 14, 1992.

Comment No. 3: Several residents have expressed concern over Lexington County's decision to fund the Remedial Investigation/Feasibility Study and the Remedial Design/Remedial Action. They have the perception that EPA is only allowing the County to fund these activities and that the other PRPs will not be held responsible for this Site.

Response to Comment: EPA views every PRP as being responsible for the investigation and cleanup of hazardous waste Sites. In the case of the Lexington County Landfill Area Site, the County, by letter dated January 16, 1992, indicated to EPA that it desired to negotiate the RI/FS at this Site. In that same letter, the County also stated:

> This letter is further notice to you that the County of Lexington does also desire a Consent Order for conducting the remedial work that is deemed to be needed at the Site.

The funding issue has been discussed during both the public information meeting and the Proposed Plan public meeting, with representatives from the Lexington County Council present to answer questions from the public.

Comment No. 4: The SC DHEC expressed concern that the Remedial Monitoring well sampling network include wells in both the Upper Unit and the Lower Unit.

Response to Comment: All proposed Remedial Monitoring for each alternative considered was based upon the collection of groundwater from wells located in both the Upper Unit and the Lower Unit.

Comment No. 5: Concern was expressed by SC DHEC that the composite barrier cap be designed in accordance with State Regulation 61-107.258.60. This regulation requires that the cap consist of the following layers:

a. Gas management layer or layers, or other design, as necessary;

b. Eighteen (18) inches of soil with a permeability of 1 x 1O-5 centimeters per

second, and capable of providing a suitable foundation for the flexible membrane liner;

c. A 20-mil flexible membrane liner (FML) with a maximum permeability equal to or less than the bottom liner system, if HDPE is used as the FML, then a sixty (60) mil thickness is required;

d. A drainage layer, and;

e. A minimum of two (2) feet of soil capable of supporting native vegetation.

SC DHEC stated that they would consider alternate cap designs only if adequate information is provided to demonstrate that these designs meet or exceed performance standards based on State Regulation 61-107.258.60., as opposed to Subtitle D requirements. Furthermore, the use of a geotextile as a substitute for the drainage layer must provide adequate stability for the overlying soil layer. This may also require the use of a geonet. The substitution of the eighteen inch (18) soil layer with bentonite matting would not provide an adequate foundation for the overlying flexible membrane liner.

Response to Comment: Subsequent discussions with SC DHEC and Lexington County led to the development of an FS Addendum. This Addendum evaluated ten (10) landfill cover alternatives for use at this Site. The primary objectives were the reduction of water infiltration, the containment of waste, and eliminating direct exposure of waste to the surface area. The Addendum identified Design #8, a Geosynthetic Clay Layer combined with an increase in the agricultural layer to eighteen (18) inches, as the most efficient and cost effective landfill cover for this Site.

Comment No. 6: The SC DHEC requested that an explanation be given regarding the omission of saturated or "wet" sediment sample S-4 from the calculation of the exposure point concentrations for the Least Shrew (dry sediment samples were used in Risk Assessment calculations for the Least shrew).

Response to Comment: The Least Shrew resides in dry areas and would not be expected to have any extensive contact with saturated sediments.

APPENDIX C

PROPOSED PLAN FOR LEXINGTON COUNTY LANDFILL AREA SUPERFUND SITE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUPERFUND PROPOSED PLAN FACT SHEET

LEXINGTON COUNTY LANDFILL AREA
SUPERFUND SITE

CAYCE, LEXINGTON COUNTY, SOUTH CAROLINA

APRIL 1994

INTRODUCTION

The United States Environmental Protection Agency (EPA), is proposing a cleanup plan, referred to as the preferred alternative, in response to contamination at the Lexington County Landfill Area Superfund Site (the Site) located in Cayce, Lexington County, South Carolina.

PUBLIC MEETING

Date: April 14, 19

Time: 7:00 p.m.

Place: Davis Eleme
2305 Frink
Cayce, SC

This Proposed Plan summarizes the cleanup methods and technologies evaluated in the Site's Feasibility Study (FS). EPA is publishing this Proposed Plan to provide an opportunity for the public's review and comment on all the cleanup options, known as remedial alternatives, considered for the Site, and to initiate a thirty (30) day public comment period, from April 6, 1994, to May 6, 1994, during which EPA will receive comments on this Proposed Plan and the RI/FS reports. EPA, in consultation with South Carolina Department of Health and Environmental Control, will select a remedy for the Site only after the comment period has ended and all information submitted to that time has been revie considered. EPA encoura participation by providi opportunity for the publ on the proposed remedial As a result of such comm may modify or change its alternative for the Site

This fact sheet summariz that is explained in gre Remedial Investigation (dated February 1994, and Risk Assessment, dated M and the FS, dated March documents and all other

by EPA to make the proposal specified below are contained in the Information Repository/Administrative Record for this Site. EPA encourages the public to review this information to better understand the Site and the Superfund process. The information repository/administrative record is available for public review during normal working hours, locally at the Cayce-West Columbia Branch Library 1500 Augusta Road, West Columbia, South Carolina, or in the Record Center at EPA's office in Atlanta, Georgia. Words appearing in bold italicized print within this document

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are defined in the gloss
begins on page 10.

RESULTS OF THE REMEDIAL INVESTIGATION

The Site consists of fiv
includes the 321 Landfil
municipal landfill), the
Dump, and the Bray Park
1). State and Federal s
been conducted on this S
1975. A Remedial Invest
Feasibility Study perfor
through 1993 under the d
EPA identified the follo

Waste Disposal Areas: W
areas consist of the 321

Bray Park Dump, the Old Cayce Dump, and a separate area between the Bray Park Dump and the Old Cayce Dump (Figure 1). Test pits were excavated along the suspected perimeters of each dump. Domestic trash and construction debris were observed in test pits excavated within the perimeters of the two dumps.

Methane Gas Plume: The locations of potential receptors of methane gas and the methane survey stations are illustrated in Figure 2. The highest concentration of methane (43% of the Lower Explosive Limits or 22,790 ppm) was detected at survey station SV-34 along Route 321. Methane was

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detected at adjacent sta
56,SV-58, and SV-60 belo
the LEL, and in the sout
the 321 Landfill at well
Methane concentrations w
detected at survey stati
of the LEL) and SV-2 (1%
adjacent to stream culve
Park Road in addition to
(<1% of the LEL) adjacen
existing methane recover

Surface Water and Sedime
organic and inorganic co
present in surface water
samples appear to be rel
waste disposal areas. C
the surface water

and sediment is limited to on-site areas and areas adjacent to the Site. A macroinvertebrate study indicated that this Site has impacted the aquatic environment, however, the data produced was of limited value due to drought conditions encountered during the study. Additional surface water and sediment sampling will be performed and evaluated using a risk-based approach during the Remedial Design.

Groundwater Contamination: There are two separate water bearing zones at this Site consisting of the upper aquifer and the lower aquifer. Each

<IMG SRC 0494188J>

aquifer was evaluated se
because both units are p
sources for water supply
sources for water supply
distribution of contamin
upper aquifer indicates
groundwater plume with t
extensions follow the gr
to the southeast (Figure
Groundwater within the p
contaminated with both o
inorganic compounds attr
waste placed in the disp
Seven (7) of the inorgan
(11) of the organic conc
exceeded the Maximum Con
Levels (MCLs) for those

The primary contaminants detected ingroundwater within the lower aquifer are benzene and chlorobenzene. These two compounds were detected in groundwater samples collected from test well TW-32D during Round 1 and Round 2. A benzene concentration of 12 ug/1 was also detected in the groundwater sample collected from well WW-3. Additional groundwater work will be performed to assess contamination in the lower aquifer.

Summary of Site Risks: In utilizing the presumptive remedy approach for municipal landfills, the presence of contaminant concentrations in groundwater in excess of established groundwater values (eg., MCLs justifies cleanup (remedial action).

A risk assessment was performed to evaluate the risk that would be present from the remaining contaminants (the ones below their respected MCLs in addition to contaminants that do not have established MCLs). This effort was taken in order to establish cleanup levels for contaminants without established MCLs.

The pathways of exposure can be evaluated by making assumptions such as the length and number of times exposed, how much of the chemical is ingested, and using certain other factors to estimate the total exposure to each Site-related contaminant. The potential current and future pathway are:

-Direct contact with surface water and leachate;
-Ingestion and direct co sediments;
-Ingestion and non-inges (showering, washing, etc groundwater from the upp aquifers.

The risk assessment repo that this Site presented unacceptable risk and re action. The most seriou risk at the Site is:

Potential Future R
Child - Ingestion of

While contamination leve surface water and sedime present a current risk t they do pose a potential ecological receptors. F will be performed during design to determine if c necessary. More detaile concerning Site risks is Baseline Risk Assessment

REMEDIAL OBJECTIVES AND ALTERNATIVES

Development of Remedial In the FS, cleanup optio alternatives) were evalu Site. In consideration waste volume and variety municipal landfills, tre impracticable. EPA gene containment to be the ap response action, or the Remedy". The presumptiv municipal landfill sites containment of the landf collection and/or treatm gas. Additional measure

leachate, affected groundwater, and infiltration of water into the landfill mass are also evaluated as part of this presumptive remedy.

Evaluation of Remedial Alternatives: Based on the results of the RI/FS reports and the Risk Assessment, cleanup levels were developed that would be protective of human health and the environment. These cleanup levels would form the basis of any remedial activity. Various alternatives were evaluated in the FS for meeting these cleanup levels. The following groundwater cleanup levels are based on state and federal standards, referred to as Maximum Contaminant Levels (MCLs). The cleanup standards for the Lexington County Landfill Area Site are as follows:

ORGANICS

Benzene	5	ug/l
Bis(2-ethylhexyl)phthalate	4	ug/l
Bromodichloromethane	100	ug/l
1,4-Dichlorobenzene	75	ug/l
1,1-Dichloroethene	7	ug/l
1,2-Dichloroethane	5	ug/l
Methylene Chloride	5	ug/l
Tetrachloroethene	5	ug/l
Trichloroethene	5	ug/l
Vinyl Chloride	2	ug/l

INORGANICS

Arsenic	50	ug/l
Beryllium	1	ug/l
Chromium	100	ug/l
Nickel	100	ug/l
Cadmium	5	ug/l
Barium		

The following groundwate levels are based upon to reviewed by EPA for cont which do not have MCLs. cleanup levels are prote health under the most st exposure scenario; futur ingestion of contaminate by a child. These clean

Lead
Manganese
Vanadium
Zinc

These cleanup levels are Preliminary Remediation identified in the FS, ad exposure to a child. Th presented in the FS for ug/l) and zinc (11,000 u initially derived for an for lead is protective o

Groundwater containment until all cleanup levels

The FS report evaluated cleanup methods that cou this Site. As required further action alternati to serve as a basis for the other active cleanup following outlines prese cleanup methods consider Site.

Alternative 1: No Actio

- No action taken for control of contamin

- Scheduled cap maintenance & operation of gas control system
- Annual groundwater monitoring of upper and lower unit (sample collection & analysis)

30-Year Total Present Worth Cost: $1,408,553

Alternative 2: Containment/Gas Recovery/Institutional Controls/ Monitoring

- Capping of 321 Landfill, Old Cayce Dump, and Bray Park Dump in accordance with State and Federal requirements
- Waste area between old Cayce Dump and Bray Park Dump moved to Bray Park Dump
- Expansion of the existing gas collection system
- Surface improvements to minimize erosion and control surface water runoff
- Institutional controls for groundwater and future land use
- Annual groundwater monitoring including installation of additional wells

30-Year Total Present Worth Cost: $6,081,822

Alternative 3: Containment/Gas Recovery/Groundwater Extraction and Treatment/Institutional Controls/Monitoring

- All components listed under Alternative 2
- Groundwater extract treatment process u the following optio

Alternative 3A - Groundw extraction/treatment and Privately Owned Treatmen (POTW).

30-Year Total Present Worth Cost: $6,466,967

Alternative 3B - Groundw extraction/on-site treat disposal by land irrigat

30-Year Total Present Worth Cost: $6,745,293

Alternative 4: Consolid Containment/Gas Recovery Groundwater Extraction a and Disposal/Monitoring

- All components list Alternatives 2 and
- Combining the Old C waste area 3 with e Park Dump or the 32
- Groundwater extract treatment process u the following optio

Alternative 4A - Groundw extraction/treatment and POTW.

30-Year Total Present Worth Cost: $8,332,509

Alternative 4B - Groundw extraction/on-site treat disposal by land irrigat

30-Year Total Present

Worth Cost: $8,610,836

EPA'S PREFERRED ALTERNATIVE

After conducting a detailed analysis of all of the alternatives, EPA has selected the following preferred alternative for remediation of the Site:

Alternative 4A: Consolidation/ Containment/Gas Recovery/ Groundwater Extraction and Treatment and Disposal at POTW/Groundwater Monitoring

Rationale for the Preferred Alternative

EPA has selected Alternative 4A as the best alternative for use at the Site. Because treatment is usually impracticable, EPA generally considers containment to be the appropriate response action, or the "presumptive remedy" for municipal landfill sites. The primary factors in EPA's evaluation focus on containment of the Site's waste. The following discussion is based on the comparison presented in the FS.

Protection of Human Health and Environment: Alternatives 3 (Groundwater extraction and treatment) in addition to Alternative 4 (Capping of sludge and groundwater treatment) meet the two (2) threshold criteria of protecting human health and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs): The consolidation of waste disposal areas should not trigger Land Disposal Restrictions as they will not be moved outside the curren contamination. This act under EPA's Corrective A Management Units (CAMU) Additionally, the requir capping, closure, discha groundwater monitoring w ARARs as identified in t Study.

Long-Term Effectiveness: consolidation of the Old with either the Bray Par 321 Landfill, would prov degree of long-term effe Old Cayce Dump, located groundwater discharge ar be a significant source contamination at this Si Consolidation with one o waste areas could signif the volume of groundwate treatment.

Reduction of Toxicity, M Volume Through Treatment Alternatives 3 and 4 wou toxicity, mobility, and treatment. Alternative of the Old Cayce Dump wi Bray Park Dump or the 32 would provide the greate volume reduction through amount of groundwater re treatment. Any hazardou generated by consolidati disposed of in accordanc and State requirements.

Short Term Effectiveness would have the least sho upon the environment. T alternatives could poten short term impact on hum to dust and particles ge

soil moving process. This would be minimized through dust control measures and the use of proper health and safety procedures.

Implementability: All of the alternatives use established construction techniques. Because caps and groundwater extraction and treatment systems have been installed at other sites with similar contamination problems, it is anticipated that this plan would be administratively feasible with a minimal amount of effort. The services and materials required for this alternative would be readily available on relatively short notice.

Cost: Alternative 1 would be the least costly of the alternatives to implement for this Site. Alternative 4B is the most costly of all the alternative evaluated for this Site.

State and Community Acce
This proposed plan is pr
evaluation by both the S
Community. Acceptance o
proposed plan will be ev
on comments received dur
upcoming public meeting
public comment period.

COMMUNITY PARTICIPATION

Concurrent with the rele
Proposed Plan, EPA has i
day public comment perio
6, 1994 through May 6, 1
submission of written an
comments on the Proposed
supporting documentation
the Administrative Recor
comments, written or ora
directed to Terry Tanner
Project Manager for the
address and telephone nu
below. Upon timely requ
extend the public commen
30 additional days. EPA
accept comments at the p
on April 14, 1994, and e
rationale behind the pre
Alternative 4A.

GLOSSARY

Administrative Record - A file which is maintained and contains all info make its decision on the selection of a response action under CERCLA. T available for public review and a copy is to be established at or near t repository. A duplicate file is maintained in a central location such a office.

Applicable or Relevant and Appropriate Requirements (ARARs) - Requiremen a response action selected by EPA as a site remeby. "Applicable" requir under one or more Federal or State laws. "Relevant and Appropriate" req while not necessarily required, EPA judges to be appropriate for use in

Aquifer - An underground geological formation, or group of formations, c groundwater that can supply wells and springs.

Baseline Risk Assessment - An assessment which provides an evaluation of health and the environment.

Comprehensive Environmental Response, Compensation and Liability Act (CE passed in 1980 and modified in 1986 by the Superfund Amendments and Reau This act creates a trust fund, known as Superfund to investigate and cle uncontrolled hazardous waste sites.

Groundwater - Underground water that fills pores in soild or openings in for drinking, irrigation, and other purposes.

Information Repository - Materials on Superfund, including site-specific conveniently for local residents.

Lower Explosive Limit - The concentration of a compound in the air below propagate (grow) if the mixture is ignited.

Macroinvertibrate - Small animals lacking backbones found in sediments o

Maximum Contaminant Levels (MCLs) - The maximum permissible level of a c which is delivered to any user of a public water system.

National Priorities List (NPL) - EPA's list of uncontrolled or abandoned for long-term cleanup under the Superfund Remedial Program.

Plume - A three dimensional zone within the groundwater that contains co moves in the direction of, and with, groundwater flow.

Record of Decision (ROD) - A public document that explains which cleanup a National Priorities List site and the reasons for choosing the cleanup possibilities.

Remedial Investigation/Feasibility Study (RI/FS) - Two distinct but rela
together, intended to define the nature and extent of contamination at a
appropriate, site-specific remedies.

Superfund Amendments and Reauthorization Act (SARA) - Modifications to C
October 17, 1986.

FOR MORE INFORMATION CONTACT:

Remedial Project Manager
Terry Tanner

Community Relations Coordinator
Cynthia Peurifoy
AT
U.S. Environmental Protection Agency - Region IV
North Superfund Remedial Branch
345 Courtland Street, N.E., Atlanta, GA 30365
1(800) 435-9233, or (404) 347-7791

****

Jim Bowman, Hydrologist
Superfund Section, Division of Hydrogeology
South Carolina Department of Health &
Environmental Control
2600 Bull Street, Columbia, South Carolina 29201
(803) 734-2948

REQUEST TO BE PLACED ON THE
LEXINGTON COUNTY LANDFILL AREA SUPERFUND SITE MAILING LIST

If you would like your name and address placed on the mailing list for t
County Landfill Area Superfund Site, please complete this form and retur
Peurifoy, Community Relations Coordinator, EPA-Region IV, North Superfun
Branch, 345 Courtland Street, Atlanta, Georgia 30365, or call 1-800-435-

NAME:_____

ADDRESS:_____

_____

TELEPHONE:_____

AFFILIATION:_____

Lexington County Landfill
Proposed Plan Fact Sheet

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Lexington County Landfill Site i
select a final remedy for the site. You may use the space below to writ
to Terry Tanner. A response to your comment will be included in the Res

Comments Submitted By:

Name _____
Address _____
City _____ State _____ Zip _____
Affiliation _____

United States Environmental Protection Agency

North Superfund Remedial Branch

345 Cou
Atlan

Official Business
Penalty for Private Use
$300

Cynthia Peurifoy
Community Relations Coordinator

APPENDIX E

TRANSCRIPT OF THE PROPOSED PLAN PUBLIC MEETING

STATE OF SOUTH CAROLINA)

)

COUNTY OF LEXINGTON)

- - -

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUPERFUND PROPOSED PLAN FACT SHEET

LEXINGTON COUNTY LANDFILL AREA

SUPERFUND SITE

CAYCE, LEXINGTON, COUNTY SOUTH CAROLINA

DAVIS ELEMENTARY SCHOOL
2305 FRINK STREET
CAYCE, SOUTH CAROLINA

TRANSCRIPT OF PUBLIC HEARING

- - -

THURSDAY, APRIL 14, 1994
7:10 P. M. - 8:49 P. M.

- - -

APPEARANCES: TERRY TANNER, E.P.A. REMEDIAL PROJECT MANAGER
CYNTHIA B. PEURIFOY, E.P.A. COMMUNITY RELATIONS COORDINATOR

COURT REPORTER: LORI S. MORTGE CCR (GA)
HANWELL REPORTING SERVICE
920 MOHEGAN TRAIL
WEST COLUMBIA, SOUTH CAROLINA 29169
(803) 791-4127

ALSO PRESENT:

JOHN ATKINS
LINDA C. BLOODWORTH
JIM BOWMAN, DHEC HYDROGEOLOGIST
RUSSELL BRITT, BUSINESS MANAGER INTERNATIONAL
UNION OF OPERATING ENGINEERS
ART BROOKS, LEXINGTON COUNTY DEPARTMENT
ADMINISTRATION
BARBARA CLARKSON
DAN GENSAMER, PAR TEE DRIVING RANGE
TODD GOING
SUZANNE HOUSE
LOVYST HOWELL, ATSDR
LINDA LARKEE
TONY MANCINI, ATLANTA TESTING AND ENGINEERING
WILLIAM MORGAN
CHARLES NICHOLSON
RUTH NICHOLSON
LANE PARKER, TREASURER, INTERNATIONAL UNION OF
OPERATING ENGINEERS
ROGER SCOTT, PALMETTO HEALTH DISTRICT OF DHEC
LOWELL C. BUTCH SPIRES, JR., COUNTY COUNCILMAN
EUGENE THOMAS
BRUCE TODD, SITE CONSULTANTS
WALTER TURBEVILLE, CAYCE SANITATION DIRECTOR

* * * (NO EXHIBITS WERE MARKED) * * *

(THE FOLLOWING WAS HAD AT 7:10 P. M.):

MR. TANNER: ON BEHALF OF E.P.A., I WOULD LIKE TO WELCOME EVERYONE HERE TONIGHT FOR THIS MEETING ON THE LEXINGTON COUNTY LANDFILL. MY NAME IS TERRY TANNER, I'LL BE CONDUCTING THE MEETING TONIGHT. I AM ALSO THE PROJECT MANAGER FOR E.P.A. ON THIS SITE.

I'D ALSO LIKE TO INTRODUCE CYNTHIA PEURIFOY HERE TO MY LEFT. CYNTHIA IS THE COMMUNITY RELATIONS COORDINATOR WITH E.P.A. SHE HELPS US TO PUT ALL THIS TOGETHER. SHE ALSO HELPS US IN OUR MEETINGS, IN GETTING A LOT OF THINGS ACROSS TO YOU FOLKS, AND DOES A VERY GOOD JOB AT IT, TOO.

I'D ALSO LIKE TO INTRODUCE JIM BOWMAN FROM THE STATE. AND WE ALSO HAVE A COUPLE OF PEOPLE FROM THE HEALTH DEPARTMENT, TODD GOING AND LOVYST HOWELL HERE IN THE BACK, NO NEED TO STAND UP. I JUST WANTED TO MENTION THAT.

I'VE HAD A CHANCE TO TALK TO SOME OF YOU PEOPLE TONIGHT TO GET A LITTLE IDEA ABOUT SOME OF YOUR CONCERNS FOR BEING HERE, AND THERE'S A WIDE RANGE I'M PICKING UP ON. I'M GOING TO TRY TO GET TO THOSE ISSUES TONIGHT, AT LEAST AS MANY OF THEM AS I CAN. IF I CAN'T ANSWER THEM FOR YOU, I'LL TRY TO FIND SOMEONE WHO CAN.

IN MY WORLD OF RESPONSIBILITIES AT E.P.A, THEY'RE VERY NARROW. I DON'T HAVE INVOLVEMENT IN A LOT OF THE OTHER PROJECTS, BUT I AM HEAVILY INVOLVED IN THIS BEING ONE OF THE PROJECTS. BUT I'LL DO WHAT I CAN TO FIND YOU THE INFORMATION YOU NEED, SO JUST BEAR WITH ME IF YOU WOULD.

A COUPLE OF THINGS I WANT TO TALK ABOUT BEFORE WE BEGIN, AND THAT'S SOME ASSUMPTIONS THAT WE HAVE. WE'VE ALL COME HERE TONIGHT WITH EXPECTATIONS. MOST OF US HAVE COME HERE WITH EXPECTATIONS. ONE OF THE THINGS THAT I WANTED US TO DO WAS TO TRY TO CREATE SOME UNDERSTANDING. IF NOT, WE REALLY WILL HAVE WASTED A BEAUTIFUL EVENING HERE TONIGHT.

A LOT HAS HAPPENED ON THIS SITE, SOME OF IT VERY TECHNICAL, SOME OF IT VERY EMOTIONAL. I'D LIKE TO DO WHAT I CAN TO TELL YOU WHAT I KNOW ABOUT IT AND YOU CAN DO THE SAME WITH ME, GIVE ME SOME UNDERSTANDING, AND I'LL TRY TO GIVE YOU SOME UNDERSTANDING AS WELL.

EVERY TIME I PUT ONE OF THESE SITES TOGETHER, I ALWAYS STRUGGLE WITH THE LEVEL OF DETAIL THAT I WANT TO PRESENT TO YOU FOLKS. BECAUSE OF THE SCIENTIFIC NATURE OF THESE STUDIES, THERE ARE A LOT OF FIGURES AND FORMULAS AND LABORATORY RESULTS, AND

I ALWAYS WRESTLE WITH HOW MUCH TO GIVE YOU. I WANT TO KEEP YOUR INTEREST GOING, BUT I DON'T WANT TO GIVE YOU SO LITTLE THAT YOU DON'T HAVE A GOOD UNDERSTANDING OF WHAT'S GOING ON SO HELP ME WITH THAT. I'M GOING TO BE STRUGGLING WITH THAT ALL NIGHT, SO BEAR WITH ME AND LET ME KNOW IF YOU NEED MORE INFORMATION OR LESS OR IF I'M BOGGING YOU DOWN OR NOT. LET ME KNOW.

HERE'S THE OUTLINE OF OUR AGENDA TONIGHT. WE JUST FINISHED WITH THE INTRODUCTIONS AND OPENING REMARKS. NEXT WE'RE GOING TO TALK A LITTLE BIT ABOUT THE SUPERFUND PROCESS, HOW ONE OF THESE SITES GETS PLACED ON E.P.A.'S LIST, WHY WE'RE CLEANING IT UP, A LITTLE BIT ABOUT HOW WE'RE GOING TO DO THAT AND WHERE WE ARE NOW ON THIS SITE. I'M GOING TO GO INTO THE BACKGROUND OF THE LEXINGTON COUNTY LANDFILL, AND TALK ABOUT THE RESULTS FROM THE INVESTIGATION WE JUST PERFORMED.

WE'RE ALSO GOING TO PRESENT TO YOU FOLKS TONIGHT A PROPOSAL FOR CLEANING UP SOME OF THE PROBLEMS -- WELL, THE PROBLEMS AT THE LANDFILL. WE'RE ALSO GOING TO TALK ABOUT THE FUTURE ACTIVITIES, THINGS TO COME, WHAT'S GOING TO HAPPEN NEXT, AS WELL AS COMMUNITY RELATIONS AND ALSO QUESTIONS AND ANSWERS.

(PAUSE). OKAY. I WANT TO TALK TO YOU BRIEFLY ABOUT THE PROCESS, WHAT E.P.A. DOES WHEN IT GOES THROUGH ONE OF THESE SITES. THE FIRST STEP THAT YOU CAN SEE FROM THE LIST IS SITE DISCOVERY THROUGH A WIDE RANGE OF SOURCES -- E.P.A. GETS TIPS ABOUT PROBLEM AREAS LIKE THIS. A LOT OF TIMES THEY'RE FROM PEOPLE CALLING IN AND SAYING, "HEY, I SAW SOME DRUMS OVER HERE" OR "A TANK THAT FELL OFF A TRUCK" OR "I SAW SOMEBODY DUMP SOME WASTE," SO AND SO, AND WE BEGIN TO FOLLOW THEM OUT.

WE PUT THEM THROUGH A SCREENING PROCESS TO TRY TO EVALUATE WHETHER OR NOT THEY NEED FURTHER INVESTIGATION. IF THEY DO, INDEED, NEED FURTHER INVESTIGATION, WE TRY TO FIND OUT THE PEOPLE RESPONSIBLE FOR CREATING THE SITES TO BEGIN WITH. WE NEGOTIATE WITH THEM, TRY TO GET THE COMPANIES TO COME FORWARD AND SIGN AN AGREEMENT WITH E.P.A. TO PERFORM THE INVESTIGATION.

ONCE WE'VE AGREED TO THE TERMS, WE GO OUT AND ACTUALLY COLLECT OUR SAMPLES -- SOIL, GROUNDWATER, SURFACE WATER, SEDIMENT. YOU NAME IT, WE'RE OUT THERE SAMPLING IT. ONCE WE GET ALL THE INFORMATION BACK WE SIFT THROUGH THE MATERIAL, WRITE A REPORT, AND TRY TO OUTLINE WHAT IT IS THAT WE FOUND. ONCE WE'VE DONE THAT, WE WILL WRITE A RECORD

OF DECISION WHICH YOU CAN SEE IN THIS STEP HERE (INDICATING). RECORD OF DECISION SIMPLY OUTLINES WHAT WE'RE PROPOSING TO DO NEXT, WHAT WE THINK NEEDS TO BE DONE.

FOLLOWING THAT, WE GO BACK TO THE PARTIES THAT WE KNOW OR THAT WE FEEL CONTRIBUTED TO THE WASTE AT THE SITE AND NEGOTIATE WITH THEM FOR THE ACTUAL CLEANUP. ONCE THEY'VE AGREED TO CLEAN IT UP, WE GO ON TO THE REMEDIAL DESIGN OR REMEDIAL ACTION. WE'LL TALK A LITTLE BIT MORE ABOUT THAT TONIGHT.

THE STEP THAT WE'RE AT CURRENTLY IS THIS STEP HERE (INDICATING). WE'VE JUST COMPLETED THE INVESTIGATION FOR THIS SITE. AND, AS PART OF THE PROCESS, WE'RE COMING BACK TO THE PUBLIC NOW AND SAYING, "HEY, THIS IS WHAT WE FOUND AND THIS IS WHAT WE'RE PROPOSING TO DO AS THE -- WHAT E.P.A. FEELS THE BEST POSSIBLE ALTERNATIVE FOR CLEANING UP THE SITE."

BEFORE I GO ANY FURTHER, I WANT TO TURN THIS OVER TO CYNTHIA, CYNTHIA PEURIFOY, AGAIN OUR COMMUNITY RELATIONS COORDINATOR, IS GOING TO TELL YOU A LITTLE BIT ABOUT THE PROCESS AND HOW WE LIKE TO INVOLVE THE COMMUNITY IN THIS. CYNTHIA?

MS. PEURIFOY: THANK YOU, TERRY. GOOD EVENING. AGAIN, I'M CYNTHIA PEURIFOY AND I'M THE

COMMUNITY RELATIONS COORDINATOR FOR THE LEXINGTON COUNTY LANDFILL SUPERFUND SITE AS WELL AS ALL OF THE SUPERFUND SITES IN SOUTH CAROLINA EXCEPT THE SAVANNAH RIVER PLANT.

I'M REALLY GLAD THAT YOU'RE HERE WITH US TONIGHT AND, AGAIN, I'D LIKE TO ENCOURAGE YOU TO INTERACT AND LET US KNOW HOW THE INFORMATION IS BEING RECEIVED. AND EVEN IF IT'S AFTER THIS MEETING IF YOU HAVE SUGGESTIONS FOR OTHER MEETINGS, PLEASE FEEL FREE TO DO SO.

TERRY JUST TALKED WITH YOU A LITTLE BIT ABOUT THE SUPERFUND PROCESS. WELL, THAT PROCESS IS ABOUT TO UNDERGO SOME CHANGES. IT IS UP FOR REAUTHORIZATION, AND I'D LIKE TO ENCOURAGE YOU TO GET INVOLVED. THERE ARE SOME VERY EXCITING CHANGES BEING PROPOSED FOR PUBLIC PARTICIPATION, SUCH AS ESTABLISHMENT OF COMMUNITY WORK GROUPS AT EACH SITE -- A LOT OF DIFFERENT THINGS. AND I'D LIKE TO ENCOURAGE YOU TO TAKE A LOOK AT WHAT'S BEING PROPOSED BY THE CLINTON ADMINISTRATION, MAKE YOUR RECOMMENDATIONS TO YOUR CONGRESSIONAL REPRESENTATIVES, AND LET US KNOW ALSO, YOU KNOW, WHAT YOU THINK MIGHT BE GOOD CHANGES TO TAKE PLACE.

I WANT TO, AGAIN, TALK ABOUT THE TECHNICAL

ASSISTANCE GRANTS PROGRAM. E.P.A. PROVIDES TECHNICAL ASSISTANCE, GRANTS TO COMMUNITIES, THERE ARE $50,000 GRANTS THAT YOU CAN GET TO HIRE YOU A TECHNICAL ADVISER TO REVIEW THE E.P.A. DOCUMENTS, SUCH AS THE DOCUMENTS THAT WE'RE TALKING ABOUT HERE TONIGHT, AND THE DOCUMENTS THAT WE'LL DEVELOP IN THE FUTURE. YOU CAN APPLY FOR A TECHNICAL ASSISTANCE GRANT UP UNTIL THE TIME THAT THE SITE IS PROPOSED FOR DELISTING, SO YOU STILL HAVE TIME. IF YOU'RE INTERESTED IN A TECHNICAL ASSISTANCE GRANT, LET ME KNOW. I'LL BE GLAD TO COME UP AND WORK WITH YOU AND GET THAT PACKAGE PUT TOGETHER.

I WANT TO TELL YOU A LITTLE SOMETHING ABOUT SOMETHING THAT E.P.A. IS DOING THIS SUMMER. WE'RE GOING TO BE HAVING WHAT WE CALL A TEACHER'S INSTITUTE IN ATLANTA JULY 17TH THROUGH THE 29TH, AND IT'S FOR MIDDLE AND HIGH SCHOOL TEACHERS TO TEACH THEM AND GET THEM FAMILIAR WITH THE THINGS THAT E.P.A. DOES AND THE SUPERFUND PROGRAM, RCRA. IT'S GOING TO COVER A LOT OF AREAS SO THAT THEY CAN WORK WITH COMMUNITIES ON THE LOCAL LEVEL IN THE SCHOOLS OR WHAT HAVE YOU TO HELP BETTER THE UNDERSTANDING OF THE ENVIRONMENTAL ISSUES. SO IF ANYBODY KNOWS A TEACHER THAT MIGHT BE INTERESTED IN COMING, SEE ME AFTER THE MEETING AND I'LL BE GLAD

TO HAVE A PACKAGE SENT TO THEM ON THE -- ON THE INSTITUTE.

NOW, ABOUT TONIGHT'S MEETING. YOU KNOW WE'RE IN A COMMENT PERIOD THAT ENDS MAY 6TH. HOWEVER, THAT COMMENT PERIOD CAN BE EXTENDED FOR AN ADDITIONAL 30 DAYS. YOU JUST NEED TO LET TERRY OR MYSELF KNOW IF YOU FEEL YOU NEED MORE TIME TO REVIEW THE DOCUMENTS OR TO PREPARE YOUR COMMENTS, BUT WE ARE ALSO ACCEPTING COMMENTS TONIGHT.

THE ADMINISTRATIVE RECORD IS AVAILABLE AT THE CAYCE-WEST COLUMBIA BRANCH LIBRARY. AND I WANT TO APOLOGIZE TO EVERYBODY NOW FOR MAKING THE MISTAKE IN THE AD IN PUTTING THE WRONG LIBRARY. THAT WAS MY FAULT, I APOLOGIZE FOR IT DEEPLY. THOSE DOCUMENTS ARE THERE. IF YOU GOT A FACT SHEET IN THE MAIL OR A FACT SHEET TONIGHT, THE CORRECT INFORMATION IS IN THERE.

AS YOU SPEAK TONIGHT PLEASE MAKE SURE THAT OUR COURT REPORTER CAN HEAR YOU, AND PLEASE IDENTIFY YOURSELF BECAUSE WE ARE GOING TO HAVE A TRANSCRIPT OF THIS MEETING THAT WE'LL BE USING TO PREPARE WHAT WE CALL A RESPONSE AND SUMMARY.

THE RESPONSIVENESS SUMMARY IS PREPARED PRIOR TO THE RECORD OF DECISION THAT TERRY TALKED ABOUT, AND IT ADDRESSES ALL THE COMMENTS THAT WERE

RECEIVED DURING THE COMMENT PERIOD. SO MAKE SURE YOU IDENTIFY YOURSELF, AND THAT RESPONSIVENESS SUMMARY WILL ALSO BE AVAILABLE AT THE INFORMATION REPOSITORY ALONG WITH THE RECORD OF DECISION WHEN IT IS SIGNED.

I THINK THAT REALLY CONCLUDES WHAT I HAD TO TALK ABOUT TONIGHT. AGAIN, I WANT TO ENCOURAGE YOUR FEEDBACK AND, YOU KNOW, EVEN IF IT'S NOT TONIGHT AT ANOTHER TIME IF YOU HAVE ANYTHING YOU'D LIKE TO SAY WE DO HAVE AN 800 NUMBER. IT'S ON THE FACT SHEET. IT WAS IN THE AD IN THE PAPER. CALL US, LET US KNOW WHATEVER WE CAN DO TO MAKE THINGS BETTER OR TO ANSWER ANY QUESTIONS YOU MAY HAVE. THANK YOU, TERRY.

MR. MORGAN: ABOUT EXTENDING THIS TIME --

THE COURT REPORTER: CAN I HAVE YOUR NAME; PLEASE?

MR. MORGAN: -- SINCE THE AD WAS RUN WRONG, I FEEL THAT GIVES ABOUT A 90-DAY EXTENSION.

THE COURT REPORTER: CAN I HAVE YOUR NAME, PLEASE?

MR. MORGAN: WILLIAM MORGAN.

MR. TANNER: MR. MORGAN, WE CAN'T EXTEND THE TIME PERIOD. BY LAW, I DON'T THINK WE CAN EXTEND IT 90 DAYS.

MR. MORGAN: BY STATE LAW, 30 DAYS AHEAD OF TIME STUFF IS SUPPOSED TO BE PUBLICIZED BEFORE YOU HAVE A HEARING. BY STATE LAW. THAT WOULD BE A 30-DAY NOTICE THIS WAS ONLY NOTIFIED ON THE 6TH OF THIS MONTH. THAT AIN'T -- THAT'S A FAR CRY FROM 30 DAYS, NOW.

MR. TANNER: CYNTHIA?

MS. PEURIFOY: I THINK I CAN EXPLAIN TO YOU A LITTLE BIT ABOUT HOW WE DO THIS. WE USUALLY TRY TO GIVE YOU MORE TIME AT THE END OF THE COMMENT PERIOD AFTER THE MEETING, AND THIS IS DONE BASED ON DOING THIS A LOT. PEOPLE HAVE TOLD ME THAT THEY WOULD PREFER WE COME EARLIER IN THE COMMENT PERIOD -- AND THIS GROUP MAY BE DIFFERENT. IF THAT'S TRUE, LET ME KNOW. BUT THEY LIKE IT EARLY SO THAT THEY CAN HEAR THE PRESENTATION, THINK ABOUT WHAT WE'RE SAYING, AND THEN HAVE TIME TO GO BACK AND PREPARE THEIR COMMENTS.

NOW, WE CAN EXTEND IT FOR AN ADDITIONAL 30 DAYS, THAT'S NO PROBLEM, BUT THE LAW DOES NOT ALLOW US. WE'RE WORKING BY THE SUPERFUND, NOW, LAW, NOT BY STATE LAW.

MR. MORGAN: YOU'RE STILL IN SOUTH CAROLINA.

MS. PEURIFOY: WELL, YEAH, I KNOW, BUT WE

CAN EXTEND IT FOR AN ADDITIONAL 30 DAYS IF YOU REQUEST IT. WE HAVE NO PROVISION TO EXTEND IT FOR A LONGER PERIOD OF TIME.

MR. TANNER: LET'S TALK A LITTLE BIT ABOUT THE BACKGROUND OF THE LEXINGTON COUNTY LANDFILL. THE SITE ACTUALLY CONSISTS OF SEVERAL AREAS -- THE 321 LANDFILL, THE BRAY PARK DUMP, AND THE OLD CAYCE DUMP. THE 321 LANDFILL WAS FORMALLY USED AS A SAND QUARRY BETWEEN 1940 UNTIL THE LATE '60S.

(INDICATING). THIS SHOULD GIVE YOU A LITTLE BIT BETTER IDEA. HERE WE SEE THE 321 LANDFILL, WOULD BE THIS LARGE AREA HERE, THE BRAY PARK DUMP AREA WHICH I REFERRED TO, AND THE OLD CAYCE DUMP HERE AS WELL.

WELL, BACK IN 1970, THE CITIES OF CAYCE AND WEST COLUMBIA PURCHASED 57 ACRES OF THE SAND QUARRY TO USE AS A LANDFILL. THE COUNTY OBTAINED THE PERMIT FROM THE STATE IN 1971, AND ESSENTIALLY THIS PERMIT GAVE THE COUNTY AUTHORITY TO ACCEPT GENERAL HOUSEHOLD AND INDUSTRIAL WASTE.

NOW, WASTE WAS PLACED IN THE QUARRY AND COVERED WITH SOIL, TYPICAL LANDFILL TYPE OPERATIONS. THE LANDFILL -- OR THE LANDFILL CONTINUED UNTIL 1988 WHEN THE CAPACITY OF THE 321

LANDFILL WAS REACHED. THE LANDFILL WAS LATER CLOSED IN 1991 OR 1990. A METHANE RECOVERY SYSTEM WAS INSTALLED, AND WE'LL TALK A LITTLE MORE ABOUT THAT LATER.

NOW, ALTHOUGH THE MAJORITY OF THE WASTE PLACED IN THE LANDFILL CONSISTED OF SANITARY DOMESTIC TYPE WASTE, HOUSEHOLD WASTE, THE RECORDS INDICATE THAT THERE WAS INDUSTRIAL WASTE PLACED IN THE LANDFILL AS WELL.

THERE WERE TWO OTHER FORMER DISPOSAL AREAS PRESENT, THE OLD CAYCE DUMP AND THE BRAY PARK DUMP. AGAIN, YOU CAN SEE THE FIGURES HERE. THE OLD CAYCE DUMP WAS ACTUALLY AN UNCONTROLLED DUMP, WHICH STARTED IN THE 1960'S. IT WAS VERY TYPICAL OF DUMPS AT THE TIME WHERE YOU SIMPLY HAVE A PILE OF TRASH AND PEOPLE DRIVING BY WOULD SEE THAT AND DECIDE INSTEAD OF MAKING TWO PILES OF TRASH IT WOULD BE BETTER TO PUT THEIR PILE WITH THE OTHER PILE. WELL, OVER THE YEARS THIS CONTINUED AND, LO AND BEHOLD, DEVELOPED INTO THE OLD CAYCE DUMP.

WE ALSO HAVE THE BRAY PARK DUMP. THE BRAY PARK DUMP WAS USED BY THE CITIES OF CAYCE AND WEST COLUMBIA FROM THE MID-'60S T0 1970, APPROXIMATELY. THE DUMP RECEIVED SOLID WASTE DURING THIS PERIOD AND IS PRESENTLY COVERED WITH SOIL. IT'S HARD TO

DIFFERENTIATE. MOST OF THE MORE DISCERNIBLE LANDMARKS YOU WILL SEE WHEN YOU DRIVE BY THE 321 HIGHWAY IS THE ACTUAL LARGE LANDFILL ITSELF HERE.

NOW, WASTE DISPOSAL RECORDS WE DO HAVE FOR THE 321 LANDFILL. THEY'RE NOT EXACTLY COMPLETE, BUT WE DO HAVE RECORDS OF WHAT WENT IN THERE AND SOME OF THE PEOPLE RESPONSIBLE FOR TAKING WASTE TO THE LANDFILL.

THE OLD BRAY PARK DUMP AND THE OLD CAYCE DUMP ARE A LITTLE DIFFERENT. UNFORTUNATELY, WE DO NOT HAVE RECORDS OF WHAT WENT IN THESE DUMPS. AND BECAUSE IT WAS AN UNCONTROLLED SITUATION, NO RECORDS PROBABLY EVER EXISTED.

THIS BRINGS US UP TO THE NEXT STEP IN THE INVESTIGATION. AS PART OF THE STUDY PERFORMED ON THIS SITE, WE PERFORMED A -- A LOT OF SAMPLING. WE ALSO PERFORMED SOME SPECIAL TESTING, SUBSURFACE GEOPHYSICAL SURVEYS. IT GIVES US AN IDEA OF WHAT IS BELOW THE SURFACE WITHOUT ACTUALLY GOING DOWN THERE AND DIGGING THE STUFF UP. IF YOU HAVE BURIED WASTE BENEATH THE SOIL, THE SURFACE GEOPHYSICAL SURVEYS WILL OFTEN PICK THOSE THINGS UP.

WE ALSO DUG TEST PITS, ESPECIALLY IN THE AREAS AROUND THE OLD BRAY PARK DUMP AND THE -- THE OLD CAYCE DUMP AND THE OLD BRAY PARK DUMP, RATHER. WE

ACTUALLY WENT OUT WITH A BACKHOE AND EXCAVATED AROUND THE EDGES TO TRY TO FIND OUT WHAT WENT IN THERE, TRY TO GET SOME IDEA OF THE WASTE THAT WAS ACTUALLY DEPOSITED IN THERE.

WE ALSO TOOK SURFACE WATER AND SEDIMENT SAMPLING. YOU CAN SEE, HOPEFULLY, THE STATIONS MARKED. THESE WERE THE SEDIMENTS AND SURFACE WATER. THERE WAS ACTUALLY A STREAM AND A SPRING HERE AT THIS PORTION OF THE PROPERTY WHERE WE COLLECTED SAMPLES.

THERE'S ALSO A MORE OF AN INTERMITTENT STREAM, IT'S NOT ALWAYS WET, BUT WE DID MANAGE TO COLLECT SAMPLES THROUGH HERE AND OTHER SAMPLES AND MORE SURFACE WATER SAMPLES THROUGH HERE TO TRY TO GIVE US SOME IDEA OF THE QUALITY OF THE WATER AND THE SEDIMENT IN THESE AREAS (INDICATING).

NOW, AS PART OF OUR INVESTIGATION, WE ALSO TOOK GROUNDWATER SAMPLES AND MANY OF THEM. ALL OF THESE POINTS THAT YOU'RE SEEING ON THIS MAP ARE ACTUALLY LOCATIONS WHERE THERE WAS EITHER AN EXISTING GROUNDWATER MONITORING WELL OR WE CAME IN AND INSTALLED ADDITIONAL NEW WELLS. AND YOU CAN SEE THEY WERE SCATTERED ACROSS THE ENTIRE SITE.

GROUNDWATER IS OFTEN A GOOD INDICATOR OF WHAT IS GOING ON AND HOW SERIOUS THESE SITES ARE.

TYPICALLY WHEN CONTAMINATION COMES INTO CONTACT WITH THE SOIL, IT WILL SIT THERE UNTIL WATER COMES ALONG AND WASHES IT OR CARRIES IT DOWN INTO THE WATER TABLE. ONCE IT GETS IN THE WATER TABLE, YOU CAN GO IN AND VERY READILY SAMPLE IT. I MEAN NOT ONLY CAN YOU GO BACK AND SAMPLE THE SOIL SAMPLES WHERE THE CONTAMINATION MAY HAVE BEEN, BUT THE GROUNDWATER IS ALSO A GOOD INDICATOR TO LET US KNOW, GIVE US SOME IDEA (A) IF THE WASTE IS THERE AND (B) IF IT'S GOTTEN INTO THE GROUNDWATER.

WELL, THIS IS WHAT WE FOUND TO SUM UP OUR INVESTIGATION. WE FOUND THAT GROUNDWATER IN THE UPPER AQUIFERS ARE CONTAMINATED WITH ORGANIC AND INORGANIC COMPOUNDS. WE ALSO SAW SOME CONTAMINATION IN THE LOWER AQUIFER. AT THIS POINT WE'RE NOT SURE WHETHER OR NOT THE CONTAMINATION PRESENT IN THE LOWER AQUIFER WAS DUE TO SOME OF THE WELLS THAT WE PUT IN ACTUALLY CREATED -- OR SOME OF THE OLDER WELLS ESPECIALLY THAT WERE PUT IN THEY COULD HAVE POTENTIALLY CREATED A PATHWAY FOR THE CONTAMINATION TO GO DOWN INTO THE LOWER AQUIFER. WE'RE NOT SURE.

WE DON'T KNOW HOW EXTENSIVE IT IS, BUT IT IS NOT AS EXTENSIVE AS THE CONTAMINATION IN THE UPPER AQUIFER. WE DO HAVE SOME WELLS DOWN THERE. WE'RE

GOING TO GO BACK AND DO SOME ADDITIONAL SAMPLING OF THE LOWER AQUIFER JUST TO SEE IF WE HAVE ALL OF THE CONTAMINATION IDENTIFIED, BUT WE'LL TALK A LITTLE BIT ABOUT THAT LATER.

WE ALSO FOUND SOME CONTAMINATION IN THE SURFACE WATER AND THE SEDIMENT SAMPLES. WE FOUND SOME ORGANIC CONTAMINANTS IN THOSE PARTICULAR SAMPLES.

A CHARACTERISTIC COMMON TO LANDFILLS IS METHANE GAS. IF ANY OF YOU HAVE EVER SEEN A LANDFILL BURNING, VERY COMMON THING, MOST OF THE TIMES IT BURNS BECAUSE OF METHANE GAS. METHANE GAS RESULTS WHEN YOU BURY WASTE UNDER THE GROUND, KEEP IT NICE AND MOIST. OVER A PERIOD OF YEARS, IT BEGINS TO BREAK DOWN. DURING THIS PROCESS, AS IT BREAKS DOWN IT TENDS TO RELEASE METHANE GAS, AND METHANE GAS IS VERY FLAMMABLE.

WELL, ONE OF THE THINGS WE DID WHEN WE STARTED THE INVESTIGATION WAS TO DETERMINE HOW EXTENSIVE THE METHANE WAS IN THE AREA. I DON'T KNOW IF YOU FOLKS HAVE EVER HAD THE CHANCE TO SEE THIS OR NOT, BUT THE 321 LANDFILL DOES HAVE AN EXISTING METHANE GAS COLLECTION SYSTEM ON TOP OF IT. AND ONE OF THE THINGS WE WANTED TO DO WAS TO FIND OUT IF, INDEED, THAT METHANE GAS PLUME WAS BEING CONTAINED BY THOSE

-- BY THE COLLECTION SYSTEM.

NOW, AT THIS POINT, IS EVERYONE STILL WITH ME? IS THIS MAKING SENSE? GOING TOO FAST, TOO SLOW?

(NO RESPONSE)

MR. TANNER: THIS MAP, TO GIVE YOU AN IDEA OF WHAT WE FOUND WHEN WE SAMPLED THE GROUNDWATER, AS YOU CAN SEE THESE SERIES OF CIRCLES REPRESENT BENZENE CONCENTRATIONS IN THE GROUNDWATER. AGAIN, YOU'LL NOTICE THE WELLS.

BENZENE IS SOMETHING YOU WOULDN'T NORMALLY WANT TO DRINK IN YOUR WATER. BECAUSE OF THAT, THE FEDERAL GOVERNMENT AND THE STATE GOVERNMENT HAS ESTABLISHED SAFE DRINKING WATER LEVELS FOR THAT. BECAUSE OF OUR PROGRESS, IF YOU WOULD CALL IT THAT, IT'S VERY HARD TO GET CLEAN WATER ANYWHERE, EVEN IF IT COMES STRAIGHT OUT OF THE CITY WATER SYSTEM. NONETHELESS, THERE ARE ACCEPTABLE LEVELS AND THIS FIGURE SHOWS WHERE THOSE ACCEPTABLE LEVELS GO AT THE LANDFILL. AS YOU CAN SEE, THE LARGE RING HERE (INDICATING).

AGAIN, THIS AREA REPRESENTS THE BENZENE CONTAMINATION AT THE SITE IS WHAT WE CALL A GROUNDWATER PLUME. IT'S REPRESENTATIVE OF THE CONTAMINATION PRESENT AT THE SITE IN THE

GROUNDWATER. YOU CAN SEE SOME HIGHER AREAS OF CONTAMINATION HERE WHERE WE HAVE UP TO 30 PARTS PER BILLION, I BELIEVE, ALL THE WAY DOWN TO WHAT WE'RE CALLING THE ZERO LINE OF CONTAMINATION.

WHAT THIS TELLS US ESSENTIALLY IS IF YOU HAVE A WELL HERE, IT'S SAFE TO DRINK THE GROUNDWATER (INDICATING). IF YOU HAVE A WELL -- IT'S GOING TO BE HARD TO DRAW -- HAVE A WELL IN THIS AREA (INDICATING), THE GROUNDWATER IS PROBABLY GOING TO BE SUSPECT.

WHAT WE DID FIND DURING OUR INVESTIGATION ARE THERE IS -- THERE ARE NO DRINKING WATER WELLS IN THIS AREA, SO THERE IS NO IMMEDIATE THREAT TO THE PUBLIC.

ONE OF THE THINGS THAT WE'RE GOING TO DO, AND IT'S PART OF OUR RESPONSIBILITY, IS TO MAKE SURE THAT THIS CONTAMINATION DOES NOT REACH ANY DRINKING WATER WELLS.

THIS NEXT SECTION IS A LITTLE BIT CHALLENGING. WE PERFORM WHAT WE CALL A RISK ASSESSMENT. A RISK ASSESSMENT GIVES US SOME IDEA OF THE RISK ASSOCIATED WITH THE SITE. WE LOOK AT A LOT OF DIFFERENT PATHWAYS. WE LOOK AT EVERY CONCEIVABLE WAY THAT A HUMAN BEING OR A CHILD OR ANIMALS COULD COME INTO CONTACT WITH CONTAMINATION AT THE SITE.

WHAT WE DO IS WE TAKE THAT INFORMATION AND WE PUT IT INTO A MATHEMATICAL MODEL. IF WE KNOW THAT CONTAMINATION "X" IS BAD AT TEN PARTS PER BILLION, WE KNOW HOW MUCH CONTAMINATION IS AT THE SITE, WE BEGIN TO HAVE SOME WAY OF IDENTIFYING THE THREAT OR THE POTENTIAL THREAT THAT THESE SITES POSE.

THIS IS WHAT WE FOUND OUT WHEN WE EVALUATED THE LEXINGTON COUNTY LANDFILL SITE. WE FOUND OUT THAT DRINKING WATER STANDARDS WERE EXCEEDED FOR ELEVEN ORGANIC COMPOUNDS, SEVEN OF THE INORGANIC COMPOUNDS IN THE WATER.

THE BIGGEST POTENTIAL THREAT WE FOUND FROM THE SITE WAS THE POTENTIAL OF, AGAIN, DRINKING GROUNDWATER, AND THAT WOULD BE A CHILD DRINKING THE GROUNDWATER. AGAIN, I WANT TO EMPHASIZE THAT THERE ARE NO EXISTING GROUNDWATER WELLS AT THE SITE. THIS IS ONLY THE POTENTIAL.

WE ALSO, AS I MENTIONED EARLIER, FOUND SOME CONTAMINATION IN SURFACE WATER AND SEDIMENT. NOW, THEY WEREN'T AT LEVELS GREAT ENOUGH TO POSE A THREAT TO HUMAN HEALTH; HOWEVER, MY PEOPLE WHO WORK ON THE BUGS AND BUNNIES END, THE ECOLOGICAL ASPECT OF E.P.A., TELLS ME THAT THESE CONCENTRATIONS COULD POTENTIALLY POSE A THREAT TO SOME OF THE WILDLIFE OUT THERE.

WE WENT BACK, LOOKED AT THE DATA. WE SAID WELL, THIS IS A POSSIBILITY. WE'RE NOT SURE THAT WE HAVE ENOUGH SAMPLING TO DATE, HOWEVER, TO GO IN AND PROPOSE ACTUAL REMEDIATION OF THE SURFACE WATER AND SEDIMENT. WHAT WE WOULD LIKE TO DO IS COME BACK, TAKE SOME MORE SAMPLES, TRY TO DETERMINE EXACTLY OR SPECIFICALLY HOW EXTENSIVE THE CONTAMINATION IS IN THE SURFACE WATER AND SEDIMENT. GO BACK, PLUG IT IN TO OUR RISK ASSESSMENT NUMBERS TO MAKE SURE THAT IT DOES WARRANT CLEANUP. AND AT THE TIME IF IT DOES, WE'LL PROBABLY COME BACK, HOLD ANOTHER PUBLIC MEETING, TELL YOU WHAT WE FOUND AND GO FROM THERE.

(PAUSE). LANDFILLS AREN'T ENTIRELY NEW TO E.P.A. WE BEGIN TO SEE A LOT OF LANDFILLS POP UP ON OUR LISTS, AND IT'S NOT SURPRISING BECAUSE OF THE WASTE THAT GETS PLACED INTO THESE THINGS. EVENTUALLY, THEY'RE GOING TO LEAK OUT.

WELL, E.P.A. DECIDED THAT WE'RE BEGINNING TO SEE SO MANY OF THESE THINGS, THERE'S PROBABLY -- OR THERE COULD POTENTIALLY BE A STANDARDIZED WAY OF ADDRESSING THEM. NORMALLY WHEN WE HAVE A SITE, WE LOOK AT EVERY METHOD UNDER THE SUN FOR CLEANING IT UP. SOMEONE HAD THE FORESIGHT TO SAY, "WELL, INSTEAD OF EVALUATING ALL OF THE WAYS OF

POTENTIALLY CLEANING UP A LANDFILL," AND WE HAVE MANY OPTIONS AT OUR CHOICE. EVERYTHING FROM DIGGING UP EVERY WASHER AND DRYER AND NEWSPAPER IN THE LANDFILL, ENCASING IT IN CEMENT AND SENDING IT OFF TO A HAZARDOUS WASTE LANDFILL UNTIL THE WORLD ENDS, ALL THE WAY UP TO USING AN ELECTRICAL CURRENT TO GLASSIFY (PHONETIC) THE WASTE. WE BEGAN TO SAY "WELL, IS THIS REALLY PRACTICAL TO DO?" MOST OF THE TIMES WHAT WE SAW IN OUR CLEANUPS WERE WHERE WE SIMPLY TRY TO CONTAIN THE WASTE. THAT WOULD MEAN ASSURING THAT NONE OF THE CONTAMINATION WAS GOING TO MIGRATE PAST THE LANDFILL BOUNDARIES AND POSE A THREAT TO YOU FOLKS LIVING HERE IN THE COMMUNITY.

A COUPLE OF WAYS OF DOING THAT -- AND, BY THE WAY, THIS PROCESS IS ACTUALLY CALLED A PRESUMPTIVE REMEDY, WHICH MEANS THAT WE'RE GOING TO PRESUME THAT WE'RE NOT GOING TO LOOK AT EVERY METHOD UNDER THE SUN FOR CLEANING IT UP. IT SIMPLY WASN'T NECESSARY.

AGAIN, WHAT WE SAW FROM OUR EXPERIENCE WAS THERE ARE A HANDFUL OF REMEDIES THAT ARE PRACTICAL TO TRY, AND THAT IS WHAT WE LOOKED AT WHEN WE EVALUATED THE ALTERNATIVES AVAILABLE TO US. AND WHEN I SAY THE TERM "ALTERNATIVE," THAT SIMPLY MEANS ONE OF THE CHOICES THAT WE LOOKED AT FOR

CLEANING UP THE SITE.

IN GENERAL THE CHOICES INCLUDE, AS YOU CAN SEE HERE IN THE LIST, CAPPING OF THE WASTE AREAS. IT'S VERY COMMON TO GO BACK AND TRY TO KEEP GROUNDWATER FROM FILTERING THROUGH THE WASTE OR, EXCUSE ME, FROM KEEPING RAIN WATER FROM FILTERING THROUGH THE WASTE CARRYING THE CONTAMINATED WATER THEN DOWN INTO THE GROUNDWATER TABLE AND HAVING IT SPREAD INTO THE WATER TABLE.

WE CAN DO THAT ESSENTIALLY BY PREVENTING THE WATER FROM GETTING THERE IN THE FIRST PLACE. WE TYPICALLY DO THAT WITH A CAP. WE SIMPLY PLACE SOME TYPE OF EITHER CLAY OR, IN SOME INSTANCES, A SYNTHETIC LINER OVER THE WASTE AREA TO KEEP THE RAIN WATER FROM PERCOLATING DOWN THROUGH THERE.

AS YOU SAW IN THE GROUNDWATER PLUME, WE DISCOVERED THAT IN THE CASE OF A LANDFILL IT USUALLY ONLY MAKES SENSE TO CONTAIN IT. AS YOU CAN SEE, THESE AREAS HERE THAT OUTLINES THE ACTUAL CONTAMINATED GROUNDWATER PLUME, WHAT WE'LL TYPICALLY DO IS GO IN AND INSTALL A SERIES OF WELLS. AND THE PURPOSE OF THESE WELLS -- (MARKS ON CHART) -- WILL BE TO PULL THE CONTAMINATED GROUNDWATER OUT OF THE GROUND; THUS, KEEPING IT FROM CONTINUING TO MIGRATE IN THIS DIRECTION AS IT

WOULD TYPICALLY DO.

GROUNDWATER FLOW IS VERY CONSTANT. GROUNDWATER, ONCE IT GETS IN THE GROUND, DOESN'T SIMPLY SIT THERE, IT FLOWS. AND IN THE CASE OF 321 LANDFILL, IN GENERAL THE GROUNDWATER FLOW IS THIS WAY (INDICATING). SO WHAT WE'RE GOING TO PROPOSE TO DO IS INSTALL A SYSTEM OF RECOVERY WELLS -- AND, AGAIN, THESE ARE A ROUGH APPROXIMATION WITH REGARD TO THEIR LOCATION -- AND TRY TO CATCH THE CONTAMINATED GROUNDWATER BEFORE IT MIGRATES PAST THEM.

MS. LARKEE: THEN WHAT DO YOU DO WITH THE CONTAMINATED GROUNDWATER?

THE COURT REPORTER: CAN I HAVE YOUR NAME, PLEASE?

MS. LARKEE: LINDA LARKEE.

MR. TANNER: LINDA, THERE'S A COUPLE OF DIFFERENT WAYS THAT WE CAN DO IT. WHAT WE'RE GOING TO PROPOSE TO DO WITH THE 321 LANDFILL IS SEND IT TO THE POTW. WE THOUGHT WITH WHAT WE'RE SEEING THE CONTAMINATION IN THERE, THE PUBLICLY OWNED. . .

MS. LARKEE: TREATMENT.

MR. TANNER: TREATMENT WORKS, SEND IT TO THE SEWER AND HAVE THEM TREAT IT. AGAIN, THERE'S A WIDE RANGE OF OPTIONS OPEN FOR TREATING

CONTAMINATED GROUNDWATER. IN THIS PARTICULAR CASE, WE THOUGHT IT WOULD BE MOST EFFECTIVE TO DO THAT. YES, SIR?

MR. MORGAN: WILLIAM MORGAN AGAIN. WHY NOT GLASSIFY IT? IT WOULD SOLVE THE PROBLEM PERMANENTLY BECAUSE IT WOULD THEN SOLIDIFY THE STUFF TO WHERE WATER WOULD NOT HURT IT. THE GLASSIFICATION WOULD STOP ALL THESE WELLS, STOP ALL THIS WORK WE HAVE TO DO ON IT.

AND ANOTHER THING IS WITH THE CAPPING, EVERY TIME THAT CAP HEATS UP THAT GROUND UNDERNEATH IT CAN CONTAIN MORE PARTS PER MILLION OF MOISTURE.

YOU UNDERSTAND WHAT PSYCHOMETRICS ARE AND WHAT A SLING PSYCHROMETER IS? WHEN YOU DO AN ANALYSIS OF AIR, FOR AIR CONDITIONING OR ANYTHING LIKE THAT, YOU USE A SLING PSYCHROMETER. YOU USE A PSYCHOMETRIC CHART TO PLOT YOUR CHART, TO KNOW HOW MUCH YOU NEED IN AIR CONDITIONING AND HOW MUCH YOU DON'T. OKAY. YOU'VE GOT TO REMOVE SO MUCH MOISTURE FOR SO MANY THINGS.

THAT CAP IS GOING TO CAUSE THAT MOISTURE TO CONDENSE UNDERNEATH IT, AND IT'S GOING TO SIPHON RIGHT BACK THROUGH IT AND THIS WILL BE AN ONGOING THING. IF YOU SOLIDIFY IT, YOU WON'T HAVE THAT.

MR. TANNER: WELL, LET'S LOOK AT SOME OF

THOSE ALTERNATIVES AND WE'LL ALSO CONSIDER THE COST AS WELL. (PAUSE). THESE ARE SOME OF THE ALTERNATIVES THAT WE EVALUATED FOR THE CLEANUP OF THIS SITE. THERE'S A TOTAL OF FOUR ALTERNATIVES, AND WE'LL START WITH THESE FIRST TWO.

BY LAW, WE'RE REQUIRED TO EVALUATE A NO ACTION ALTERNATIVE. THIS GIVES US SOME IDEA OF WHAT WOULD HAPPEN IF WE JUST WALKED AWAY FROM THE SITE. DIDN'T CLEAN IT UP, SIMPLY MONITORED IT.

AS YOU CAN SEE THE COST HERE, IT MAY SEEM SURPRISINGLY HIGH. ANALYTICAL COSTS ARE INCREDIBLE. PART OF THE REASON DRIVING THOSE COSTS ARE, UNFORTUNATELY, OUR LEGAL SYSTEM. THE INFORMATION THAT WE COLLECT, ESPECIALLY THE LABORATORY DATA, HAS GOT TO BE DEFENSIBLE IN COURT. BILLIONS OF DOLLARS DEPEND ON IT. PEOPLE WILL DO ANYTHING TO THROW QUESTION ON THAT DATA.

IT'S AN UNFORTUNATE SITUATION, BUT WE'VE HAD TO SCRUTINIZE HOW WE COLLECT THOSE SAMPLES TO AN INCREDIBLE DEGREE, IT MUST STAND UP IN COURT. THIS COST HERE BEGINS TO REFLECT THAT. WE ARE -- IN OUR SOCIETY, WE'RE VERY QUICK TO GO INTO COURT. THIS IS A REFLECTION OF THAT. THIS IS ALSO A REFLECTION OF THE COST FOR 30 YEARS OF MONITORING. IT MAKES IT A LITTLE BETTER, BUT IT'S STILL HARD TO

SWALLOW. I REALIZE THAT IS A TREMENDOUS COST FOR DOING NOTHING.

I HOPE YOU'LL BEGIN TO GET SOME IDEA NOW OF THE COST INVOLVED IN CLEANING THESE THINGS UP. BUT WE'LL CONTINUE AND, UNFORTUNATELY, IT WON'T GET MUCH CHEAPER, BUT I BELIEVE IT WILL BECOME -- YOU WILL SEE A BETTER TRADE-OFF.

ALTERNATIVE TWO: WE TALKED ABOUT CONTAINMENT, GAS RECOVERY, INSTITUTIONAL CONTROLS AND MONITORING. I SPOKE A LITTLE BIT EARLIER ABOUT CAPPING A SITE, COVERING THE SITE WITH EITHER CLAY OR PLASTIC, SOME TYPE OF IMPERMEABLE BARRIER TO KEEP RAIN WATER FROM CONTINUALLY FILTERING DOWN INTO WASTE AND CARRYING IT DOWN INTO THE WATER TABLE. THIS REMEDY INVOLVES CAPPING.

IT ALSO INVOLVES CONSOLIDATION OF WASTE AREA NUMBER THREE, WHICH WE HAVEN'T TALKED ABOUT TO DATE, BUT WAS REVEALED DURING OUR STUDY -- (MARKS ON CHART), WE FOUND A THIRD WASTE AREA, WE'RE GOING TO CALL THIS WASTE AREA THREE. IT WAS ACTUALLY LOCATED HERE (INDICATING). IT'S MUCH SMALLER THAN THE BRAY PARK DUMP OR THE OLD CAYCE DUMP. WHAT WE'RE PROPOSING TO DO IN THE SECOND ALTERNATIVE IS TO ACTUALLY COMBINE THIS WASTE AREA NUMBER THREE WITH THE BRAY PARK DUMP.

NOW, AGAIN, BECAUSE OF OUR STUDY THAT WE DID, WE NOTICED THAT THE METHANE PLUME, WHICH IS THE FLAMMABLE GAS ASSOCIATED WITH LANDFILLS, WAS A LITTLE MORE EXTENSIVE THAN WE FIRST IMAGINED. THE EXISTING RECOVERY SYSTEM FOR THE METHANE GAS IS NOT CATCHING THE ENTIRE PLUME. BECAUSE OF THE POTENTIAL THREAT THERE, WE WANT TO GO BACK IN AND EXPAND THAT SYSTEM TO MAKE SURE THAT WE'RE GETTING ALL OF THE METHANE GAS PRODUCED BY THESE WASTE AREAS.

AGAIN, IF ANYONE HAS DRIVEN BY THE SITE YOU'VE NOTICED SOME EROSION PROBLEMS. ALTERNATIVE NUMBER TWO ALSO PROPOSES THAT EROSION BE STOPPED. THIS ALTERNATIVE ALSO ADDRESSES INSTITUTIONAL CONTROLS FOR GROUNDWATER AND LAND USE, MORE COMMONLY KNOWN AS DEED RESTRICTIONS AND GROUNDWATER MONITORING. AND THE COST OF THIS REMEDY, AS YOU CAN SEE HERE. . .

MS. LARKEE: LINDA LARKEE.

MR. TANNER: YES?

MS. LARKEE: DID YOU HAVE A PICTURE WITH A METHANE GAS PLUME ON IT, A DIAGRAM OF THAT?

MR. TANNER: NO, I SURE DON'T. MY APOLOGIES FOR DOING THAT. THAT'S ONE THING THAT I OVERLOOKED.

MS. LARKEE: DO YOU HAVE ANY IDEA WHERE

IT --

MR. TANNER: OH, YES, I CAN--

MS. LARKEE: -- WOULD BE WITH ALL THOSE PICTURES UP THERE?

MR. TANNER: LET ME PULL OUT A MAP. IF YOU HAPPEN TO HAVE BROUGHT YOUR FACT SHEET WITH YOU OR GOT ANOTHER ONE FROM THE TABLE BACK THERE, I BELIEVE FIGURE TWO OR THREE SHOW SOME METHANE SAMPLING STATIONS DOTTED ALONG THE ROAD HERE UP AROUND ALL OF THESE STRUCTURES INTO THE STARMOUNT SUBDIVISION. AND -- WHERE ELSE? THERE MIGHT HAVE BEEN A COUPLE OF THEM OUT HERE AS WELL (INDICATING).

WHAT WE DID FIND IS THAT WE'RE SEEING CONCENTRATIONS OF METHANE GAS IN THESE AREAS HERE (INDICATING), ESPECIALLY ALONG THE 321 LANDFILL. IT APPEARS TO BE WHERE THE MAJORITY OF THE PLUME IS.

NOW, AS PART OF THE REMEDIAL DESIGN, WHICH IS THE NEXT STEP, WE WANT TO GO BACK IN AND DETERMINE SPECIFICALLY WHERE THAT ENDED. AS YOU RECALL, THE GROUNDWATER PLUME WE WERE ABLE TO DRAW A VERY CLEAR-CUT MAP AND FIND OUT EXACTLY WHERE IT WAS. WE'LL BE ABLE TO DO THE SAME THING WITH THE METHANE AS WELL.

WE DO KNOW THAT THE BIGGEST PROBLEM WITH METHANE IS THAT IT GETS IN BASEMENTS AND IT BUILDS UP AND THERE'S A POTENTIAL FOR A SPARK AND EXPLOSION. UNFORTUNATELY, WE'VE ALL SEEN STORIES ABOUT THAT IN THE NEWS. WHAT WE DID DISCOVER DURING THIS INVESTIGATION WERE -- ESPECIALLY IN SAMPLING THE STRUCTURES, THE HOUSES ALONG STARMOUNT SUBDIVISION AND ANY OTHER STRUCTURE WE COULD FIND, WAS THERE WAS NO BUILDUP IN THOSE STRUCTURES SO THERE'S NO IMMEDIATE THREAT FROM EXPLOSIONS TO THE HOMES. THAT WAS OUR IMMEDIATE CONCERN.

WHAT IS PROBABLY HAPPENING NOW IN THESE AREAS IS THAT THE METHANE IS MIGRATING. IT'S COMING UP TO THE SOIL AND DIFFUSING INTO THE AIR WHICH, AGAIN, THE BIGGEST THREAT FOR METHANE IS THE EXPLOSION FACTOR. BUT PLEASE ACCEPT MY APOLOGIES FOR NOT HAVING A SLIDE ON THAT.

HERE WE HAVE ALTERNATIVES THREE AND FOUR IN THE LAST TWO. ALTERNATIVE THREE INCLUDES ALL THE COMPONENTS LISTED UNDER TWO, BUT INCLUDES GROUNDWATER EXTRACTION. NOW, TO DATE -- OR AT LEAST THE OTHER TWO ALTERNATIVES THAT WE LOOKED AT DID NOT INCLUDE ADDRESSING THE CONTAMINATED GROUNDWATER. PUTTING IN WELLS, PULLING UP THE CONTAMINATED GROUNDWATER AND CLEANING IT UP.

ALTERNATIVE THREE DOES.

WE LOOKED AT TWO OPTIONS: LOOKED AT DISPOSING IN THE SEWER, AND A SECOND WHICH INCLUDES OR PROPOSES THAT WE TAKE THE CONTAMINATED GROUNDWATER, PUT IT BACK ON THE LAND SURFACE. IT'S NOT QUITE AS INSANE AS IT SOUNDS. IT IS GOOD FOR MAINTAINING VEGETATION ON TOP OF THE LANDFILL.

IT DOESN'T REALLY TREAT THE PROBLEM, HOWEVER. YOU JUST SIMPLY END UP RECYCLING CONTAMINATED GROUNDWATER. NONETHELESS, WE LOOKED AT IT AS A POTENTIAL OPTION, WHICH DOESN'T NECESSARILY IMPLY WE'RE GOING TO DO IT. WE SIMPLY EVALUATED IT.

AND THEN WE HAVE ALTERNATIVE FOUR. ALTERNATIVE FOUR CONSISTS OF ALL THE COMPONENTS LISTED UNDER ALTERNATIVE THREE, INCLUDES SOMETHING -- SOMETHING A LITTLE DIFFERENT AND A PROBLEM WE DISCOVERED WHEN WE WERE PERFORMING THE INVESTIGATION.

YOU'LL NOTICE THE STREAMS THAT ARE IN THIS GENERAL AREA OF THE OLD CAYCE DUMP. THIS WAS THE FORMER STANLEY POND AREA, AND THERE USED TO BE AND MAY STILL BE SPRINGS IN THIS AREA. IT WAS VERY COMMON PRACTICE YEARS AGO THAT YOU HAD A HOLE, DIDN'T MATTER IF IT HAD WATER IN IT OR NOT, YOU FILLED IT WITH TRASH. FILLED IT UP WITH ENOUGH

TRASH, THEN YOU COVERED IT WITH SOIL. IT'S VERY COMMON.

WE BELIEVE THAT'S WHAT HAPPENED HERE. THIS AREA ACTUALLY HAS, OR STILL HAS, SPRINGS IN THERE THAT ARE FEEDING IT. AND WHAT THIS TELLS US IS ANY TIME YOU SEE A SPRING, IT SIMPLY MEANS THAT THE GROUNDWATER AQUIFER, OR THE WATER TABLE AT THAT POINT IN LAND, IS EVEN WITH THE LAND SURFACE AND THE GROUNDWATER IS ACTUALLY DISCHARGING UP OUT OF THE LAND. THIS COMPLICATES THIS AREA SIMPLY BECAUSE WE NOW HAVE WASTE LITERALLY SITTING IN THE WATER TABLE.

NOW, FROM WHAT WE CAN TELL FROM THE INVESTIGATION, IT IS NOT THE CASE WITH THE 321 LANDFILL OR THE BRAY PARK LANDFILL OR THE WASTE AREA THREE. THESE AREAS ARE WELL ABOVE THE WATER TABLE.

HOWEVER, AGAIN, A TROUBLESOME SITUATION WITH THE OLD CAYCE DUMP. AGAIN, WE BELIEVE IT IS SITTING IN THE WATER TABLE AND THE WASTE IS IN THE WATER TABLE. AND, BECAUSE OF THAT, WE PROPOSED A METHOD OF ADDRESSING THAT. AND WHAT THAT WILL INCLUDE IS CONSOLIDATION OF THE OLD CAYCE DUMP AND WASTE AREA THREE WITH EITHER THE BRAY PARK DUMP OR THE 321 LANDFILL.

WE FELT THAT BECAUSE OF THIS SITUATION IT WOULD BE BETTER TO MOVE THIS WASTE UP OUT OF THE GROUNDWATER, GET THE CONTAMINATION OUT OF THE GROUNDWATER, PUT IT SOMEWHERE WHERE IT CAN BE DRY AND COVERED WITH A CAP TO KEEP IT DRY.

AGAIN, ALTERNATIVE FOUR ALSO PROPOSES GROUNDWATER EXTRACTION, PUTTING IN SOME WELLS, PULLING UP THAT CONTAMINATED GROUNDWATER AND TREATING IT. AGAIN, TWO DIFFERENT METHODS. EITHER SENDING IT TO THE SEWER OR LAND IRRIGATION.

MR. PARKER: TERRY?

MR. TANNER: YES.

MR. PARKER: YOU SAID OLD CAYCE AND THE OLD LANDFILL THERE. IF YOU -- LANE PARKER, I'M SORRY. IF YOU GET THE TRASH OUT OF THE WATER SYSTEM THERE, DO YOU FEEL LIKE YOU COULD TREAT THE WATER SAFELY WHERE YOU WOULDN'T HAVE TOO MUCH OF A PROBLEM WHERE YOU'VE GOT THE WATER GOING OUT NOW?

MR. TANNER: COULD YOU REPHRASE THAT?

MR. PARKER: AFTER YOU REMOVE YOUR TRASH THERE, SO-CALLED TRASH THAT'S IN THE OLD CAYCE DUMP WHERE YOU HAVE THE WATER GOING OUT, I KNOW IT'S PRESUMPTIVE BUT DO YOU FEEL LIKE THAT WATER WOULD BE FAIRLY SAFE OR WILL IT BE FEEDING FROM THE OLD AREA THERE? IS THIS A LOWER SPOT WHERE IT WOULD

JUST DRAW FROM THERE?

MR. TANNER: I'M NOT SURE THAT THE WATER WILL BE PRISTINE ENOUGH TO DRINK. AS A MATTER OF FACT, WE'LL PROBABLY STILL HAVE GROUNDWATER RECOVERY WELLS IN THIS AREA TO KEEP CONTAMINATION FROM MOVING UP. THE GROUNDWATER IS NOT ONLY CONTAMINATED HERE FROM THIS AREA, BUT IT'S PROBABLY AS WELL CONTAMINATED FROM THE WASTE IN THE 321 LANDFILL.

WHAT WE ARE PROPOSING IS WE CAN AT LEAST STOP SOME OF THAT CONTAMINATION BY GETTING THIS UP OUT OF THE GROUNDWATER TABLE. IF WE CAN INSTALL AN EFFECTIVE ENOUGH CAP ON THERE, WE'RE HOPING THAT THE GROUNDWATER CONTAMINATION LEVELS WILL BEGIN TO DECLINE BECAUSE WE WILL HAVE, IN EFFECT, CUT OFF THE SOURCE OR, RATHER, REMOVED THE SOURCE FROM THE GROUNDWATER ITSELF.

MR. PARKER: ONE OTHER QUESTION WHILE I'M -- I HATE TO DOMINATE THIS.

MR. TANNER: THAT'S OKAY.

MR. PARKER: IF YOU BRING YOUR TRASH UP THERE, YOU KNOW, PER SE, THE OLD CAYCE LANDFILL, SPREAD IT ON TOP THERE, REMEDIATE YOUR WATER FROM GOINT OUT, AND BUILD THAT TYPE OF WALL TO KEEP SPREADING IT OUT FROM YOU AND YOUR WELLS AROUND THE

OUTSIDE AND BUILD A CAP ON TOP, WOULD THAT NOT BE PRETTY SAFE?

MR. TANNER: I THINK SO. I DON'T BELIEVE THAT'S ENTIRELY DIFFERENT FROM WHAT WE'RE PROPOSING. ARE YOU TALKING ABOUT A SLURRY WALL?

MR. PARKER: YEAH, A SLURRY WALL. THAT'S ANOTHER WAY, ANOTHER EXPRESSION.

MR. TANNER: WELL, I DON'T BELIEVE WE LOOKED AT A SLURRY WALL, ALTHOUGH THAT'S CERTAINLY A POSSIBILITY.

MR. PARKER: IF YOU MITIGATE IT OUT FROM YOUR SOURCE -- SPEAKING OF THAT, PER SE, AFTER YOU -- AFTER YOU -- AFTER YOU'VE DRAWN YOUR TRASH OUT OF THE OLD CAYCE, THAT'S BASICALLY YOUR PROBLEM AREA RIGHT NOW FROM SPREADING; RIGHT?

MR. TANNER: WELL, IT'S ONE OF THE PROBLEM AREAS. AGAIN, WE GO BACK TO THE CONTAMINATION IN THE GROUNDWATER. IT NOT ONLY INCLUDES THIS AREA BUT---

MR. PARKER: BASICALLY AFTER YOU'VE DONE THAT THEN PUT YOUR STRIPPER WELLS, YOU CAN PRETTY WELL DO THIS FAIRLY EASILY -- OR FAIRLY SAFE. I KNOW IT'S GOING TO BE A PROBLEM, BUT IT WILL ALLEVIATE A LOT OF PROBLEMS.

MR. TANNER: I THINK IT WILL REDUCE MANY

OF THE PROBLEMS IF WE CAN AT LEAST CUT DOWN ON THE SOURCE AND GET THE SOURCE UP OUT OF THE GROUNDWATER.

MS. LARKEE: LINDA LARKEE. WHAT'S A SLURRY WALL?

MR. TANNER: OKAY. LET ME SEE IF I CAN DRAW YOU A PICTURE OF ONE. PARDON THE CRUDITY OF THIS DRAWING. (MARKS ON CHART). THIS WOULD BE A BURIED WASTE AREA, THIS WOULD BE THE LAND SURFACE, AND THIS WOULD BE THE GROUNDWATER, THE WATER BENEATH THE SOIL.

WHAT WE'RE TALKING ABOUT, OR WHAT LANE IS PROPOSING, IS YOU CAN ACTUALLY GO IN AND INSTALL A WATERPROOF WALL. AND, IN THIS CASE, WE HAVE GROUNDWATER SITTING ON, SAY, A CLAY BED. SO, FOR THE MOST PART, THE GROUNDWATER IS GOING TO STOP HERE, IT'S GOING TO SIT WITHIN THIS AREA (INDICATING).

WHAT LANE WAS PROPOSING TO DO IS GO IN AND PUT IN A WATER TIGHT WALL HERE (INDICATING), AND WHAT THAT ESSENTIALLY DOES IS CONTAIN THE WASTE. IT'S ALMOST LIKE CONTAINING THE GROUNDWATER IN A BATHTUB. IT'S VERY EXPENSIVE, SIMPLY BECAUSE YOU CAN IMAGINE HOW LONG THIS WALL WOULD HAVE TO BE. IT WOULD ESSENTIALLY HAVE TO ENCASE THE WASTE

AREA. AND -- DOES THAT -- DOES THAT HELP CLARIFY THINGS FOR YOU?

MS. LARKEE: WHAT DO THEY MAKE THE WALL OUT OF? A CEMENT WALL?

MR. PARKER: A WATERPROOF TYPE SURFACE.

MR. TANNER: AGAIN, TYPICALLY THEY WOULD USE BENTONITE, WHICH IS A -- I DON'T KNOW THE ACTUAL CHEMICAL COMPOSITION, BUT IT'S SOMETHING THAT STARTS OUT LIKE A POWDER OR PELLET AND IT SWELLS AND MAKES A WATERTIGHT STRUCTURE. ALMOST LIKE -- I GUESS YOU COULD THINK OF IT LIKE ALMOST THE EQUIVALENT OF A CEMENT WALL, ALTHOUGH IT WOULD BE MUCH MORE WATERTIGHT. IT WOULD BE LIKE---

MR. PARKER: HOW BIG IS IT?

MR. TANNER: THAT WOULD BE BASED ON THE ENGINEERING STUDY. YOU GET A LOT OF VARIATION, DEPENDING UPON HOW MUCH WATER YOU'RE GOING TO HAVE TO HOLD BACK. OBVIOUSLY THE MORE PRESSURE ON THIS WALL HERE, THE THICKER IT WOULD HAVE TO BE.

MS. LARKEE: AND HOW DEEP?

MR. TANNER: WELL, IT WOULD HAVE TO EXTEND AGAIN FROM THE -- IF THIS WAS THE GROUND SURFACE (INDICATING) IT WOULD HAVE TO BE ABOVE THE WATER TABLE AND GO ALL THE WAY DOWN TO A CONFINING LAYER, SO THERE WOULD BE NO WAY FOR THE

CONTAMINATION IN THIS AREA TO ACTUALLY LEAK OUT IN HERE.

IT'S EQUIVALENT TO BUILDING AN UNDERGROUND POOL. YOU COULD ALMOST THINK OF IT LIKE THAT. DOES THAT HELP CLARIFY THINGS FOR YOU?

MS. LARKEE: AND IT WOULD HAVE TO GO AROUND THE WHOLE LANDFILL AREA -- OR THE WHOLE AREA, THE POOL AREA?

MR. TANNER: WELL, ALMOST. AGAIN, IF YOU WERE ON A SLOPE AND IF THIS WERE -- IF THIS ALL RAN UPHILL HERE AND EVENTUALLY THE WATER TABLE WENT LIKE THIS (INDICATING), YOU WOULDN'T NEED A WALL HERE BUT YOU WOULD AROUND PROBABLY THREE-QUARTERS OF THE SITE. IT DEPENDS. IT'S VERY SITE SPECIFIC.

MR. PARKER: THOSE THINGS ARE VERY EASY TO INSTALL. WE HAVE WHAT WE CALL A SOIL SOFT (PHONETIC). IT'S LIKE IT'S CUSTOM FIT OR YOU CAN COME BACK IN THE BACK OF IT AND RIGHT BEHIND YOU. IT'S A PRETTY FAST PROCESS BUT IT'S, LIKE YOU SAY, IT'S VERY EXPENSIVE. NONE OF THIS STUFF IS GOING TO BE NICKEL AND DIME STUFF, YOU ALL REALIZE THAT. IT'S GOING TO BE VERY EXPENSIVE TO REMEDIATE THIS SITUATION.

MR. TANNER: UNFORTUNATELY, THAT TENDS TO

BE THE CASE WITH SUPERFUND SITES.

WELL, I OUTLINED THE FOUR ALTERNATIVES THAT WE LOOKED AT. WE HAD TO FIND SOME WAY OF EVALUATING, AND THIS IS THE CRITERIA THAT WE USED. WE WOULD NEVER PICK A REMEDY THAT WE FELT WAS NOT PROTECTIVE OF HUMAN HEALTH AND ENVIRONMENT. THAT HAS T0 BE MET. THERE ARE ALSO CERTAIN FEDERAL AND STATE STANDARDS THAT MUST BE MET. THE OTHER ITEMS THAT YOU SEE ON THE REST OF THIS LIST ARE A LITTLE BIT MORE SUBJECTIVE.

BUT WHEN WE'RE LOOKING AT ALL OF THESE ALTERNATIVES AND CONSIDERING WHICH ONE WE SHOULD OR SHOULD NOT USE, ESSENTIALLY THIS IS THE ENTIRE LIST THAT WE USED. IT MUST MEET THESE IN SOME SHAPE, FORM OR FASHION.

WE BEGIN TO BALANCE THEM NOW -- OR AT THAT POINT. WE'LL SAY, "WELL, IF THEY WILL ALL" -- "IF THEY WILL ALL REDUCE THE TOXICITY AND THE MOBILITY OR THE VOLUME THROUGH TREATMENT, WHICH ONES WILL DO IT A LITTLE BIT BETTER THAN OTHERS?" SOME OF THEM TEND TO BE MORE EFFECTIVE OVER THE SHORT-TERM THAN THE LONG-TERM. WE ALSO EVALUATED THOSE. WE LOOKED AT COSTS.

AND WE'RE HERE TONIGHT AND FOR THE NEXT 30 OR 60 DAYS TO LOOK AT THESE TWO ISSUES HERE, WHICH

BRINGS US TO E.P.A.'S PREFERRED ALTERNATIVE.

AFTER LOOKING AT THESE FOUR ALTERNATIVES, AND EVALUATING THEM WITH THE CRITERIA WE JUST PRESENTED TO YOU, ALTERNATIVE 4(A) IS, IN E.P.A.'S OPINION, THE BEST CHOICE FOR CLEANING UP THE SITE. INCLUDES CONSOLIDATION, THE WASTE AREAS, CONTAINMENT, A GAS RECOVERY AND GROUNDWATER EXTRACTION TREATMENT.

WELL, I'VE BEEN TALKING TOO MUCH. I WANT TO GIVE YOU FOLKS A CHANCE NOW TO GIVE US SOME INPUT, QUESTIONS, CLARIFICATIONS. OPEN UP THE FLOOR TO QUESTIONS. DON'T HESITATE. LINDA?

MS. LARKEE: LINDA LARKEE. BACK TO THIS EXTRACTION AND TREATMENT OF THE WATER AGAIN, THEY SAY YOU WOULD DIG WELLS -- YOU HAVE TO DIG MORE WELLS IN THE WATER THAT WAS COLLECTED IN THE WELLS. AND THEN HOW WOULD YOU GET THE WATER TO THE PLANT? WOULD YOU GO BY TRUCKS OR -- I MEAN, I DON'T KNOW. HOW WOULD YOU GET THAT WATER TO THE PLANT?

MR. TANNER: WELL, ONCE THE WELLS ARE INSTALLED, WE WOULD USE PUMPS TO BRING THE GROUNDWATER UP OUT OF THE GROUND THROUGH A SERIES OF PIPES OR TUBING. WE WOULD THEN -- IN THE CASE THAT WE DECIDE OR EVERYONE AGREES TO SEND IT TO THE WATER TREATMENT PLANT THERE IS A LINE, I BELIEVE, I

BELIEVE THERE IS A PRESSURE LINE -- THERE IS EITHER A PRESSURE LINE THAT RUNS HERE OR -- I BELIEVE IT IS HERE. CAN SOMEONE FROM THE CITY HELP -- YES.

WHAT WE WOULD ESSENTIALLY DO IS WE WOULD TAKE THE GROUNDWATER FROM THE WELLS, PUMP IT UP, AND CONNECT IT TO THIS LINE HERE AND SEND IT TO THE TREATMENT PLANT.

MS. LARKEE: WOULD THESE BE UNDERGROUND PUMPS, OR WHERE WOULD THE PUMPS BE? CAN YOU SEE THEM?

MR. TANNER: YES. USUALLY YOU CAN SEE THE PUMPS. THEY'RE, I THINK, VERY OFTEN MOUNTED.

MR. PARKER: ARE YOU TALKING THE WELL POINT -- EXCUSE ME, THE WELL POINT OPERATION FOR SUCKING UP, YOU KNOW---

MR. TANNER: RIGHT.

MS. LARKEE: SO THE PUMP WOULD BE RIGHT ON TOP OF THE WELL?

MR. TANNER: MM-HMM.

MS. LARKEE: HOW BIG WOULD THESE WELLS BE? WOULD THEY BE LIKE THE ONES YOU'VE ALREADY DUG?

MR. TANNER: THEY WOULD TYPICALLY BE TWO INCH -- AGAIN, IT DEPENDS A LITTLE BIT ON THE ENGINEERING -- WHAT THE ENGINEERS SAY THE SIZE

WOULD WORK BEST.

MS. NICHOLSON: RUTH NICHOLSON. HOW MUCH NOISE WOULD THESE THINGS MAKE?

MR. TANNER: OH--

MS. LARKEE: NONE?

MR. TANNER: NO, YOU WOULDN'T BE ABLE TO HEAR THEM.

MR. PARKER: TERRY, LANE PARKER.

MR. TANNER: YES?

MR. PARKER: ONE OTHER QUESTION. THIS STUFF THAT YOU'RE GOING TO BE DEWATERING -- THE DEWATERING SITUATION AFTER YOU REMEDIATE THIS, WOULD YOU WANT TO HAVE SOME KIND OF PRIOR TREATMENT BEFORE WE SEND IT ON -- BEFORE YOU SEND IT ON DOWN TO THE TREATMENT CENTER, TREATMENT PLANT? BECAUSE, YOU KNOW, THERE MIGHT BE SOMETHING THERE THAT COME UP, A SITUATION WHERE YOU DIDN'T REALLY KNOW ABOUT BECAUSE, YOU KNOW, WE'RE NOT GOING TO BE -- HOPEFULLY WE'D BE A HUNDRED PERCENT IN DETECTING EVERYTHING THAT'S THERE, BUT MAYBE THERE MIGHT BE AN UNKNOWN FACTOR WE'RE NOT KNOWING ABOUT, YOU KNOW, THAT MIGHT CROP UP ON US. THAT'S A SCENARIO.

MR. TANNER: YES. THERE'S ALWAYS A CHANCE THAT ONCE WE PUMP THIS WATER UP AND GET IT OUT OF THE GROUND THAT THE CONCENTRATIONS MAY BE

SUCH THAT IT WOULD REQUIRE PRETREATMENT BEFORE WE SEND IT ON TO THE WATER TREATMENT PLANT. AND IF THAT IS THE CASE AT THE TIME, WE WOULD DO THAT.

MR. PARKER: MAYBE THAT WOULD BE A SAFEGUARD JUST TO, YOU KNOW, MAYBE A SAFEGUARD TO PUT IN PLACE BEFORE WE SEND IT ON ANYWHERE, YOU KNOW.

MR. TANNER: AGAIN, TO KEEP THE COST DOWN, IF WE DIDN'T NEED TO DO THAT WE WOULDN'T BUT WE'D HAVE TO DETERMINE THAT AT THE TIME. YES, THE GENTLEMAN BACK HERE HAD A QUESTION?

MR. SCOTT: ROGER SCOTT HERE. I'VE GOT SEVERAL QUESTIONS.

MR. TANNER: I'M SORRY. ROGER?

MR. SCOTT: SCOTT. FIRST OF ALL, AT WHAT DEPTH WOULD YOUR AQUIFER BE?

MR. TANNER: LET'S SEE. IF I COULD GET EITHER BRUCE OR TONY TO ANSWER -- TO GIVE US SOME INSIGHT. THESE FOLKS WERE INVOLVED IN THE INVESTIGATION.

MR. MANCINI: THE BOTTOM---

THE COURT REPORTER: CAN I HAVE YOUR NAME, PLEASE?

MR. MANCINI: I'M SORRY, TONY MANCINI. THE BOTTOM OF THE UPPER AQUIFER VARIES BECAUSE OF

THE TOPOGRAPHY, BUT IT VARIES 40 FEET ON UP TO ABOUT 110 FEET.

MR. SCOTT: HE SAID TWO AQUIFERS.

MR. MANCINI: THAT'S THE -- THAT'S THE BOTTOM OF THE UPPER ONE. AND THEN THE LOWER ONE IS ABOUT FIVE TO TEN FEET BELOW THAT, TOP OF THE LOWER ONE.

MR. SCOTT: THE SECOND QUESTION, YOU MENTIONED SOMETHING ABOUT WILDLIFE. MY QUESTION IS IS THERE ANY RISK ASSOCIATED WITH THE ASSUMPTION OF WILDLIFE IN THAT AREA?

MR. TANNER: AS FAR AS WE KNOW, THERE ARE NO -- WELL, THE ANIMALS THAT WE LOOKED AT, I BELIEVE THE LEAST SHREW AND THE -- I BELIEVE THE CHIPPING SPARROW. UNLESS YOU'RE OUT HUNTING FOR THOSE, IT SHOULDN'T BE A BIG THREAT TO PEOPLE HUNTING IN THE AREA.

MS. HOUSE: TERRY?

MR. TANNER: YES.

MS. HOUSE: SUZANNE HOUSE. WHERE DOES THAT STREAM GO IN THE OLD CAYCE DUMP ONCE IT MOVES OFF THE SIDE OF THAT PICTURE?

MR. TANNER: I BELIEVE EVENTUALLY IT ENDS UP IN THE CONGAREE RIVER AT SOME POINT MILES DOWNSTREAM.

MR. MORGAN: YOU DIDN'T ADDRESS HOW MUCH IT WOULD COST TO GLASSIFY IT.

MR. TANNER: IT WOULD PROBABLY CAUSE MOST OF THE PEOPLE IN THIS ROOM TO PASS OUT IF I TOLD YOU. I'M NOT SURE. WE DID NOT LOOK -- NO, SIR. WE DID NOT LOOK AT THE COST OF GLASSIFICATION BECAUSE OF OUR -- THE SHEER VOLUME, IT WOULD PROBABLY BE IN THE BILLIONS.

MR. MORGAN: THEY DO IT ALL THE TIME IN FRANCE WITH THEIR RADIOACTIVE WASTE, THAT'S WHY I WAS WONDERING ABOUT IT. IT WOULD BE A ONETIME DEAL, IT WOULDN'T BE NO MORE. IN HERE YOUR COST AS YEARS GO ON IS GOING TO KEEP GOING UP, AND 30 YEARS ISN'T GOING TO SOLVE THE PROBLEM. IT'S GOING TO BE THERE UNTIL IT'S GOTTEN OUT OF THERE. NOW YOU'RE GOING TO JUST EXTEND THE COST ON AND ON AND ON, AND IT'S GOING TO GO ON FOREVER.

MR. TANNER: YES, SIR.

MR. GENSAMER: DAN GENSAMER. I'VE HAD SOME EXPERIENCE -- I DID SEE THE OPERATION IN FRANCE WHERE THEY DO THE GLASSIFICATION AND I DID SOME WORK IN THE UNITED STATES ON THE SAME TYPE OF PROCESS. AND IN FRANCE, IN U. S. DOLLARS AND THE TIME WAS 1987, IT WAS RUNNING ABOUT $12- TO $14,000 AN OUNCE FOR THAT STUFF.

MR. TANNER: I'M SORRY?

MR. GENSAMER: $12- TO $14,000 AN OUNCE.

MR. TANNER: AN OUNCE? $12 TO $14,000 AN OUNCE? I DON'T KNOW HOW MANY TONS WE HAVE AT THE LANDFILL, BUT. . .

MS. LARKEE: LINDA LARKEE. WHAT ARE THE EFFECTS OF BENZENE IN WATER AND WHAT -- I GUESS, IF YOU BREATHE METHANE, WHAT ARE THOSE EFFECTS? I KNOW THEY WEREN'T HAZARDOUS IN DRINKING WATER AND STUFF.

MR. TANNER: WELL, I'M NOT QUITE SMART ENOUGH TO KNOW THAT, BUT THERE MAY BE SOMEONE IN THE ROOM THAT IS. WOULD OUR HEALTH PEOPLE HAVE ANY IDEA? I HATE TO QUIZ YOU AND PUT YOU ON THE SPOT.

MR. GOING: THE EFFECTS OF BENZENE CONCENTRATION IN THE WATER---

MS. PEURIFOY: TODD, I CAN'T HEAR YOU.

MR. GOING: I'M SORRY. THE EFFECTS -- HEALTH EFFECTS OF EXPOSURE TO ANY TYPE OF CONTAMINANTS DEPENDS ON THE DOSE OR THE LEVEL OF THE CONTAMINANT OF THE GROUNDWATER. AND WE'VE NOT HAD AN OPPORTUNITY TO EVALUATE THE LEVELS THAT ARE IN THE GROUNDWATER, BUT WE WILL BE DOING THAT AT A PUBLIC HEALTH ASSESSMENT IN WHICH WE'LL LOOK AT THE CONTAMINANTS AND WE'LL RELEASE THAT TO YOU.

MS. LARKEE: BUT THERE AREN'T ANY STUDIES OF WHAT BENZENE WILL DO TO YOU?

MR. MORGAN: WHAT ARE THE EFFECTS?

MR. GOING: THERE ARE EFFECTS. PROBABLY THE MOST -- THE MOST WIDELY KNOWN EFFECTS OF BENZENE IS CANCER. BUT, LIKE I SAID, IT DEPENDS ON THE AMOUNT THAT YOU'RE EXPOSED TO AND THE DURATION THAT YOU'RE EXPOSED TO IT.

AND FROM WHAT I UNDERSTAND FROM TONIGHT'S PRESENTATION, WE WOULD NOT CONSIDER THAT A POSSIBILITY AT THIS TIME BECAUSE THERE'S NO INDICATION THAT PEOPLE ARE ACTUALLY BEING EXPOSED TO CONTAMINANTS OF GROUNDWATER. BUT WE WILL BE LOOKING AT THAT.

MS. LARKEE: HOW ABOUT METHANE?

MR. GOING: METHANE I DON'T KNOW. I WOULD HAVE TO LOOK THAT UP.

MR. PARKER: TERRY, ON THIS -- LANE PARKER. ON THIS SITE OUT THERE, IS THERE ANYTHING THERE RIGHT NOW, JUST PER SE THE SITE, THAT WOULD MEET -- THAT WOULD EXCEED THE PERMISSIBLE EXPOSURE LIMITS FOR ANY OF THE KNOWN CONTAMINANTS THERE JUST BY WALKING ACROSS THE SITE OR ANYTHING LIKE THAT?

MR. TANNER: NO, NONE THAT WE'VE SEEN AS PART OF OUR INVESTIGATION. THERE'S NO IMMEDIATE

THREAT. MOST OF THE THREATS THAT WE'RE SEEING ARE FROM, AGAIN, POTENTIAL. AND TO CLARIFY THAT, THE POTENTIAL FOR THE GROUNDWATER TO ACTUALLY MIGRATE INTO A PRIVATE WELL.

MR. PARKER: IN OTHER WORDS, YOU'D HAVE TO MORE OR LESS GO THERE SEVEN DAYS, 24 HOURS A DAY?

MR. TANNER: AND PROBABLY SOME MORE THAN THAT AS WELL. YES?

MR. SCOTT: ROGER SCOTT AGAIN. SO YOU'RE SAYING THAT IN YOUR MODEL YOU'RE NOT PROJECTING THAT PLUME TO EXTEND MUCH WHERE IT IS NOW?

MR. TANNER: WELL, FORTUNATELY FOR US THE ONLY THING THAT MOVES SLOWER THAN THE GOVERNMENT IS GROUNDWATER. AND SOMETIMES -- AND I GET AS FRUSTRATED AT THIS PROCESS AS YOU FOLKS DO. I CAN TELL YOU STORIES. WE WILL, AND I DO KNOW THIS, BE ABLE TO GO OUT AND CATCH THAT GROUNDWATER BEFORE IT DOES MIGRATE. I DON'T KNOW THE ACTUAL MIGRATION RATE, AND IT'S RATED IN I BELIEVE FEET PER DAYS. DOES THAT SOUND RIGHT? BUT WE WOULD BE ABLE TO CATCH IT BEFORE IT MAKES ANY OF THE -- BEFORE IT PROGRESSES AND DOES GET IN THE WELLS AT LEAST AT THIS POINT.

HOW ABOUT COULD WE HAVE A QUESTION FROM

SOMEONE MAYBE WHO HASN'T SPOKEN UP YET? AND I'LL GET TO YOU OTHER FOLKS TOO AS WELL, BUT IS THERE ANYONE WE HAVEN'T HEARD FROM TONIGHT THAT HAS A QUESTION? YES, SIR.

MR. NICHOLSON: CHARLES NICHOLSON. IS THERE ANY POSSIBILITY OF LOCATING, SAY, HOT SPOTS IN THE DUMP THAT ARE ESPECIALLY BAD, THAT IF YOU REMOVE THOSE THE RISK WOULD BE MORE EASILY CONTAINED?

MR. TANNER: THAT WOULD BE A POSSIBILITY. GIVEN THE 100 ACRES-PLUS THAT WE LOOKED AT, THE HOT SPOTS ARE QUITE A CHALLENGE. TYPICALLY -- AND THAT IS A TYPICAL APPROACH TO LANDFILLS, WE CAN GO IN AND FIND SOME HOT SPOTS LIKE THE OLD CAYCE DUMP AREA, WE CAN GO IN AND DO SOMETHING ABOUT THOSE.

WE DIDN'T REALLY SEE ANYTHING FROM THE ANALYTICAL DATA OR THE HISTORICAL INFORMATION THAT LED US TO BELIEVE THERE WERE HOT SPOTS ATTRIBUTING TO THOSE -- TO THAT GROUNDWATER CONTAMINATION. I WISH WE COULD HAVE FOUND THEM. IT MIGHT MAKE SOME OF OUR REMEDIES A LITTLE LESS COSTLY IN THIS INSTANCE. YES?

MS. NICHOLSON: I HAVE TWO QUESTIONS ABOUT THE SECTION ON PAGES 3 AND 4 CALLED SURFACE WATER AND SEDIMENT -- RUTH NICHOLSON. ONE OF THEM

IS TALKING ABOUT THE CONTAMINATION BEING LIMITED TO ON-SITE AREAS AND AREAS ADJACENT TO THE SITE. DEFINE "AREAS ADJACENT TO THE SITE" FOR ME.

MR. TANNER: OKAY. (PAUSE). WELL, I WAS THINKING I HAD A SLIDE. IT SHOWED THE STUDY AREA AND I PROBABLY DO SOMEWHERE, WHAT WE'RE CALLING THE QUOTE, UNQUOTE, STUDY AREA IS ESSENTIALLY ENCAPSULATED BY THE AREA THAT YOU SEE HERE (MARKING ON CHART). IT MIGHT BE A LITTLE BIT BIGGER THAN THAT BUT, FOR THE MOST PART, ESPECIALLY WITH REGARDS TO THE SURFACE WATER AND THE SEDIMENT, IT WOULD BE CONTAINED TO THIS AREA HERE, WHICH WERE THE STREAMS THAT WE SAMPLED, AND FROM HERE TO I BELIEVE HERE WAS ABOUT THE LAST SAMPLE THAT WE ACTUALLY COLLECTED (INDICATING).

MS. NICHOLSON: SO SEDIMENT WAS TAKEN IN THE BIGGER AREA?

MR. TANNER: NO, MA'AM. ACTUALLY, THE SEDIMENT WOULD HAVE TO BE LIMITED TO THE STREAMS WHICH WERE HERE AND ANOTHER ONE HERE (INDICATING).

MS. NICHOLSON: AND THE OTHER THING WAS IN THAT SAME PARAGRAPH IT TALKED ABOUT HOW BECAUSE THERE WAS A DROUGHT LAST SUMMER WHEN THINGS WERE DONE IT HAD INEFFECTUAL RESULTS AND THEY'RE GOING TO TRY AGAIN. WHAT IF THERE'S A DROUGHT AGAIN?

WILL YOU EVER GET GOOD RESULTS FROM SEDIMENT AND SURFACE WATER?

MR. TANNER: WELL, IF WE COULD JUST GET THAT DARN WEATHER TO BEHAVE, IF THAT WE COULD. THAT'S THE UNFORTUNATE THING ABOUT SAMPLING. WHEN WE GO OUT TO SAMPLE, IT'S ALMOST LIKE AN ACT OF CONGRESS ITSELF GETTING EVERYONE OUT THERE AND THE EQUIPMENT. AND MANY TIMES THE WEATHER DOES NOT COOPERATE.

MS. NICHOLSON: IF YOU READ IT AT THIS SUMMER, SAY, UNDER BETTER CONDITIONS AND YOU GOT DRAMATICALLY DIFFERENT RESULTS, WHAT WOULD THAT DO TO -- I MEAN, IF WE'RE LOCKED INTO SOME SORT OF PLAN, WOULD THAT CHANGE THE PLANS? WOULD YOU BACK UP AGAIN?

MR. TANNER: YES, IT WOULD. ONE OF THE THINGS PECULIAR TO SUPERFUND SITES IS THAT EVEN THOUGH WE MAY PICK A REMEDY AND SAY -- SAY WE DIDN'T THINK THAT THAT NEEDED TO BE CLEANED UP AND FOR SOME REASON IN THE FUTURE WE WENT BACK AND DECIDED, "WELL, IT'S BEEN FIVE OR TEN YEARS. LET'S GO BACK AND RESAMPLE THAT." IF WE FIND A PROBLEM UNDER THE AUTHORITY GIVEN THE SUPERFUND, WE COULD GO BACK AND REOPEN THAT ISSUE. YES?

MR. GENSAMER: DAN GENSAMER. AT ONE TIME

I KNOW THERE WAS AN IDEA OF PUTTING A HOLDING POND FOR SURFACE WATER TO THE LEFT OF THE BALLPARK, AND THERE WAS A PIPE HOLE PUT IN AND AN ATTEMPT TO PUT A SMALL HOLDING POND IN.

MR. TANNER: THIS AREA HERE (INDICATING)?

MR. GENSAMER: YES. IS THAT GOING TO BE REINSTITUTED?

MR. TANNER: I DON'T KNOW. WE DID DETERMINE THAT WE NEEDED TO DO SOMETHING ABOUT THE SURFACE WATER RUNOFF AND THE EROSION PROBLEM. WE MAY GO BACK AND REVISIT THAT AND SAY, YOU KNOW, "LET'S REACTIVATE THAT AND WORK THAT INTO THE SCHEME," OR WE MAY DETERMINE THROUGH AN ENGINEERING STUDY THAT IT WOULD BE BEST TO TRY A SLIGHTLY DIFERENT APPROACH.

WE REALLY HAVEN'T DECIDED SPECIFICALLY HOW WE'RE GOING TO DO THAT AT THIS POINT, ONLY THAT IT DOES NEED TO BE DONE.

MR. GENSAMER: WHY I MENTIONED THAT IF IT WAS WASHED OUT AND THERE WAS A TORRENTIAL RAIN RIGHT AFTER THAT WAS INSTALLED, I DON'T KNOW WHAT COULD BE DONE TO REMEDY THAT. IT ALMOSI WASHED OUT ON I-26. IT BLEW RIGHT THROUGH THE EXISTING SYSTEM.

MR. TANNER: IT'S GOING TO BE AN ENGINEERING CHALLENGE TO DO THAT. I DON'T KNOW WHAT IT'S GOING TO TAKE AT THIS POINT, AND I DOUBT IF ANYONE DOES.

MR. GENSAMER: BUT IT WILL BE ADDRESSED?

MR. TANNER: YES, IT WILL.

(PAUSE)

MR. TANNER: YOU FOLKS ARE BEING AWFUL EASY ON ME, OR AWFUL KIND, ONE. OR YOU'RE VERY TIRED AND ARE READY TO GO HOME. OTHER QUESTIONS? LINDA, DID YOU HAVE A QUESTION?

MS. LARKEE: I DON'T KNOW IF YOU CAN ANSWER THIS, IT MIGHT BE A QUESTION FOR SOMEONE ELSE. WHO EXACTLY PAYS FOR THIS? I MEAN, IS THAT JUST LEXINGTON COUNTY TAXPAYERS OR IS THAT, YOU KNOW, WHOEVER OWNED THE DUMPS DO THEY PAY FOR IT?

MR. TANNER: I'LL TELL YOU A LITTLE BIT AT LEAST ABOUT E.P.A.'S POSITION ON WHO CLEANS THESE UP. LEGALLY, OUR LAWYERS GO THROUGH ALL THE RECORDS AND THEY DETERMINE WHO WE HAVE EVIDENCE ON. THERE'S A LOT OF DIFFERENT WAYS. SHIPPING LISTS, WASTE -- A VARIETY OF THINGS. ANYTHING -- ANY PAPERWORK TRAIL AT ALL THAT WE CAN FIND THAT ASSOCIATES A COMPANY TO A SITE, WE USE AS EVIDENCE.

IN CASE OF A LANDFILL, WE CAME UP WITH APPROXIMATELY 44 DIFFERENT RESPONSIBLE PARTIES. PART OF THE PROCESS, WE WENT TO ALL OF THEM AND SAID, "WE HAVE EVIDENCE THAT SUGGESTS YOU FOLKS WERE RESPONSIBLE FOR WASTE AT THIS SITE," AS WE DO AT ALL OUR SITES.

IN THE CASE OF THE LEXINGTON COUNTY LANDFILL, THERE WAS ONLY ONE PARTY WILLING TO OWN UP TO THAT RESPONSIBILITY. I CAN'T ANSWER FOR ANY OF THE DECISIONS. I CAN'T ANSWER FOR THE PEOPLE WHO DIDN'T COME FORWARD.

WHAT I DID DO WAS WORK WITH THE CARDS THAT I HAD. IF SOMEBODY IS WILLING TO COME FORWARD AND WORK WITH THE AGENCY, I WILL DO THAT. I KNOW THAT THE COUNTY HAS TAKEN A LOT OF HEAT FOR WHAT THEY'VE DONE, AND I'M NOT HERE TO PASS JUDGMENT ON THAT. YOU FOLKS, AND THIS IS YOUR BACKYARD, I REALIZE THAT, THOSE ARE DECISIONS AND BATTLES THAT YOU TAKE ON YOURSELF,

I DON'T KNOW WHAT WILL HAPPEN OUT OF ALL OF THIS, BUT I DO KNOW THAT MOST OF THE WORK THAT'S GOING TO BE DONE AT THIS SITE WOULD HAVE TO BE DONE REGARDLESS OF E.P,A.'S INVOLVEMENT IN IT OR NOT BECAUSE OF THE SOLID WASTE REGULATIONS. I THINK A LOT OF PEOPLE HAVEN'T -- OR MIGHT HAVE MISSED THAT

POINT BUT, AGAIN, I CAN'T REALLY SAY -- ART BROOKS, WHO IS THE ASSISTANT -- ART, WHAT'S YOUR TITLE?

MR. BROOKS: COUNTY ADMINISTRATOR.

MR. TANNER: COULD YOU GIVE US A LITTLE INSIGHT INTO LINDA'S QUESTION?

MR. BROOKS: LEXINGTON COUNTY, EARLY ON, WAS IN THE PROCESS OF THE BEST INTEREST OF ALL THE CITIZENS AND BUSINESSES OF LEXINGTON COUNTY TO CLEAN THIS SITE UP. WE ALSO HAD HEARD HORROR STORIES AND DOCUMENTED LEGAL BATTLES AS TO WHO WAS GOING TO PAY WHAT AND HOW MUCH, WHAT PERCENTAGE AND SO FORTH.

WE FELT LIKE IT WOULD BE BETTER FOR THE COUNTY TO COME FORWARD AND LESS COSTLY TO THE COUNTY OVERALL TO GO AHEAD AND TAKE RESPONSIBILITY AND MOVE FORWARD WITH THIS PROCESS. IF WE HADN'T OF DONE THAT, WE WOULD NOT BE CLOSE TO THIS POINT WE ALREADY ARE. I'M SURE WE'D STILL BE IN COURT WITH SOME OF THE OTHER PEOPLE. THERE WERE 44 PEOPLE, PRINCIPAL RESPONSIBLE PARTIES, THAT TERRY MENTIONED. SOME OF THEM WERE THE BAPTIST CHURCH IN CAYCE, YOU KNOW. THERE'S JUST A MYRIAD OF PEOPLE THAT USED THE DUMP OUT THERE.

SO -- AND I THINK SINCE THE COUNTY -- I THINK IT WAS UNUSUAL FOR THE COUNTY THAT E.P.A. DID NOT

NECESSARILY HAVE A WHOLE LOT OF EXPERIENCE DEALING WITH COUNTIES, AND SINCE THAT TIME I THINK WE'VE BEEN RECOGNIZED AS A LEADER IN A LOT OF THE OTHER MUNICIPALITIES THROUGHOUT THE COUNTRY OF LOOKING AT THIS PROCESS OF A WAY OF SAVING MONEY IN THE LONG RUN.

MS. LARKEE: SO WILL OUR TAXES GO UP TO PAY FOR THIS, OR DO YOU HAVE ENOUGH MONEY?

MR. BROOKS: YEAH. YOU KNOW, $8 MILLION FIGURE, 30 YEARS, THAT'S A QUARTER OF A MILLION DOLLARS A YEAR, I GUESS, ROUGHLY FIGURED OUT. SO -- AND WE HAVE COUNCILMAN SPIRES HERE WHO REPRESENTS US, HE'S GOING TO TELL YOU OF THE BUSINESSES AND HE WANTS TO SPEAK.

MR. SPIRES: IT STARTED OUT AS THE CAYCE DUMP, WEST COLUMBIA DUMP. THE LAND WAS BOUGHT TO START WITH WHEN I WAS ON THE RECREATION COMMISSION. THE SECURED -- PROFIT SECURED THROUGH WHAT WAS IN THE FEDERAL PROCESS CALLED BUREAU OPERATION GRANT. THAT'S HOW IT ENDED UP IN THE BALDING (PHONETIC) COMPLEX.

THE BOUNCER (PHONETIC) PROPERTY WAS THEN DECIDED TO USE THE LANDFILL. IT WAS DONE SO IN COMPLETE ACCORDANCE WITH DHEC. AT THAT TIME IT FOLLOWED THE STANDARDS OF ENGINEERING AND SOUNDNESS

OF DISPOSABLE WASTE.

LOOKING BACK AT THE '60S AND '70S, WE NOW KNOW THAT YOU SHOULD NOT HAVE PUT A LANDFILL AND SAND HILL TO BEGIN WITH. IT PREDATES ME, PREDATES MY ACTIVITY POLITICALLY; OKAY?

AT THIS POINT IN TIME WE DECIDED SEVERAL YEARS AGO AND, OF COURSE, CAYCE-WEST COLUMBIA RECEIVED A SMALL AMOUNT OF ROYALTY AS A RESULT OF GAS COVER SYSTEMS IN THERE. BUT WE DETERMINED THAT, QUITE FRANKLY, INSTEAD OF SPENDING MONEY FIGHTING LEGAL BATTLES, SPENDING MONEY WITH ALL 44 IDENTIFIED PEOPLE ON THE BASIS THAT EVERY CITIZEN, ALL 15 MUNICIPALITIES IN THE COUNTY, ALL THE BUSINESSES IN LEXINGTON COUNTY THAT PUT IN THAT LANDFILL, WE THOUGHT THE ONLY FAIR WAY TO DO IT WAS INSTEAD OF SPENDING ALL THE DOLLARS IN THE LEGAL FIGHTS THAT HAD BEEN GOING ON ALL OVER THIS COUNTRY FOR YEARS WAS SIMPLY STEP FORWARD, IDENTIFY THE PROBLEM, IDENTIFY THE COST, AND THE COUNTY DO IT.

WE DID IT, I THINK WE'RE THE FIRST COMMUNITY IN THE COUNTRY WHO TOOK THIS POSITION. I DON'T THINK -- I CAN TELL YOU FOLKS THAT, QUITE FRANKLY, IT WAS AN UNUSUAL POSITION. WE DETERMINED EARLY ON WE'D RATHER SPEND THE DOLLARS FIXING THE PROBLEM INSTEAD OF SPENDING THE DOLLARS FOR LAWYERS IN A

COURTROOM.

WE ALSO FELT IT WAS IN OUR BEST INTEREST FROM THE FACT THAT WE HAD 15 MUNICIPALITIES INVOLVED, AND ALL INDUSTRY AMD BUSINESSES PLUS THE 44 WHO WERE IDENTIFIED. WE THINK WE CAN HANDLE THE COST IN THE NORMAL COURSE OF BUSINESS IN THE NORMAL PROCESS. WE, TO THIS POINT, HAVE HANDLED THE COST INCURRED IN THE BUDGETARY PROCESS, AND WHAT WE BASICALLY HAVE IS WHAT WE HAVE AND WHERE IT STANDS AT THIS POINT.

OUR BUDGET IN THIS COUNTY IS $33,550,000. WE SPEND $14 MILLION DEALING WITH THE CRIMINAL ELEMENT, NOT THAT YOU'RE INTERESTED IN THAT TONIGHT BUT, I MEAN, THAT'S WHERE MOST OF IT GOES. AND THE BALANCE OF IT WE GET 21 CENTS ON THE DOLLAR -- THE 23 CENTS ON THE LOCAL TAX DOLLAR THAT GO TO SCHOOLS AND OTHER THINGS, AND 84 CENTS OF THAT GOES TO FIRE SERVICE AND AMBULANCE SERVICE AND LAW ENFORCEMENT, PUBLIC WORKS AND THOSE TYPE THINGS. SO WE'VE HANDLED IT VERY WELL, AND WE THINK THIS IS THE BEST ANSWER IN THE LONG RUN.

WHILE I'M UP, I WANT YOU TO UNDERSTAND SOMETHING NOW. WHEN YOU SAY "INDUSTRIAL WASTE," YOU USED THAT WORD A WHILE AGO. FOR A LONG TIME, THERE WAS NO DEFINITION BECAUSE OF THE

REGULATIONS. WHEN RULES AND REGULATIONS CAME TO BE, WE FOLLOWED THOSE RULES AND REGULATIONS.

WE ARE NOT AWARE THAT ANYTHING TOXIC OR HAZARDOUS HAS BEEN PUT IN THE LANDFILL. WE BELIEVE THAT WHAT'S GONE IN THERE HAS BEEN WITHIN WHAT IS CALLED THE MSW CATEGORY AS DEFINED BY LAW. THIS WAS SOLID WASTE WHICH DOES INCLUDE SOME PLANT AND INDUSTRY AND INDUSTRIAL TYPE WASTE, BUT IT IS NOT TOXIC AND HAZARDOUS. AND WE DON'T BELIEVE IT'S EVER BEEN IN THERE.

UNLIKE A LOT OF COUNTIES IN SOUTH CAROLINA, WE'VE ALWAYS MONITORED THAT GATE AND MONITORED WHAT WENT -- THAT'S THE REASON THERE'S BEEN SUCH GOOD RECORDS SINCE THE COUNTY HAS BEEN INVOLVED IN IT. THE RECORDS HE TALKED ABOUT NOT HAVING PREDATES THE COUNTY BECOMING INVOLVED AND OPERATING.

SO UNDERSTAND WE COMPLIED WITH WHAT -- NOT JUST ME, BUT WHOEVER WAS IN GOVERNMENT AT THE TIME COMPLIED WITH THE EXISTING LAW. WE, YEARS AGO, WHEN WE FIRST IDENTIFIED A PROBLEM WITH THE DRINKING -- WITH WELL WATER, WE WENT IN THERE WITH THE CORPORATION -- THE CITY OF CAYCE, AND THE COUNTY ENGINEER SUCH AS THAT. AND THOSE PEOPLE WHO DID LIVE IN THERE, WE RAN CITY WATER TO THEM. THAT'S THE REASON THERE ARE NO DRINKING WELL --

DRINKING WATER WELLS IN THAT AREA, SO WE TOOK CARE OF THAT A LONG TIME AGO. WE IDENTIFIED THAT EARLY ON.

METHANE GAS -- AND I HEAR YOU CONCERNED ABOUT THAT, BUT THAT'S AN OCCURRING PROCESS IN LANDFILLS BUT IT'S ALSO A RECURRING PROCESS OTHERWISE. METHANE GAS IS NOT A HAZARD TO ANYBODY'S HEALTH, BENEFIT OR WELFARE UNLESS IT'S ALLOWED TO CONCENTRATE IN LEVELS BEYOND THAT WHICH IS SET BY THE PARAMETERS OF THE TESTING PROCESS.

AND THE WAY YOU FIND OUT WHERE YOU PUT THE GAS RECOVERY SYSTEM IN, AND THERE MIGHT BE A LOT OF DIFFERENT THINGS THAT GO NOW BUT, ACTUALLY, ONE WAY IS WE GO AT NIGHT AND DO AN INFRARED X-RAY PROCESS OF THE LANDFILL TO SEE WHERE -- HOW HIGH IT CAME UP BASED ON THAT X-RAY PROCESS.

WE THINK WE'VE GOT THE METHANE GAS PROCESS HANDLED EARLY ON. IN FACT, WE MOST PROBABLY GOT INTO THE RECOVERY SYSTEM DOWN THERE -- REALLY, IN MOST LANDFILLS IN SOUTH CAROLINA IN SUCH COUNTIES, WHICH HAVE 55 COUNTY LANDFILLS, WHICH I DON'T UNDERSTAND WHY ANY COUNTY WOULD WANT MORE THAN ONE. I DON'T UNDERSTAND WHY THERE'S 355 (SIC) OF THEM IN THE STATE OF SOUTH CAROLINA, BUT THAT'S HOW MANY THERE ARE IN SOUTH CAROLINA.

BUT WE THINK WE'VE HAD THAT UNDER CONTROL FOR QUITE SOME TIME. I'VE LISTENED VERY CAREFULLY. THE ONLY THING I WOULD HAVE A REASON TO QUESTION IS THE COMMENT MADE BY YOU, TERRY, ABOUT LANDFILL BURNING.

I'VE BEEN IN THE INDUSTRY SINCE 1985, BEEN IN 21 STATES. MY COMPANY OWNS AND OPERATES 16 -- 18 LANDFILLS. I'M NOT AWARE OF ANY BURNING LANDFILLS. I THINK THAT WOULD BE AN UNCOMMON THING, FOR A LANDFILL TO BE ON FIRE. THERE MIGHT BE -- I MEAN, I'M NOT AWARE. I'M NOT SAYING THERE AREN'T ANY BUT I'M NOT AWARE THERE ARE ANY, ESPECIALLY IN SOUTH CAROLINA.

IN RELATIONSHIP TO THE SURFACE WATER CONTAINMENT AND THE SURFACE WATER CLEANUP, IN ADDITION TO THE STUDIES IN THAT AREA THEN WE NEED TO PROCEED WITH THAT AND GET DONE.

I WOULD CLOSE MY COMMENT AT THIS POINT ON THE BASIS THAT I THINK WE'VE TAKEN PROPER AND PROVED STILL NOT TO WASTE THE DOLLARS, THE TAX DOLLARS, SPENDING MONEY IN ACTUAL CLEANUP AND GET THE REMEDY IN PLACE.

THERE IS A PIPE DOWN AT THE OLD PALMETTO WOOD PRESERVING SITE THAT WE THINK WE CAN HOOK INTO TO GET DOWN TO CAYCE. AT THIS POINT IN TIME, BY SOME

PRETREATMENT PROCESS, THAT'S TO BE DETERMINED. I DON'T THINK IT'S BEEN DETERMINED AT THIS POINT THAT WE NEED TO PRETREAT.

MR. TANNER: NO, WE HAVEN'T YET.

MR. SPIRES: RIGHT. OKAY. BUT WE THINK WE HAVE A METHOD AND A WAY TO HANDLE ALL THAT. AND HAVING SAID ALL THAT I THINK WE HAVE, AT THIS POINT, FROM WHAT WE INHERITED HAVE MOVED IN A VERY QUICK AND RESPONSIBLE MANNER, AND I THINK WE'VE GOT THE PROCESS WELL IN HAND.

AND AT THIS POINT, ALTHOUGH YOU'VE ALWAYS HEARD RUMORED ABOUT HOW BAD E.P.A. IS AND ALTHOUGH AT TIMES THEY HAVE BEEN DIFFICULT IN MY OPINION, I WOULD ALSO HASTEN TO SAY THAT I THINK IT'S BEEN A GOOD WORRING RELATIONSHIP WITH DHEC AND THE PEOPLE WE'VE BEEN INVOLVED WITH AT THIS STANDPOINT IN THE TESTING PROCESS.

AND, AT THIS POINT, CAYCE-WEST COLUMBIA IS INCORPORATING WITH THE COUNTY, AND I THINK WE'RE GOING TO GET THIS THING DONE AND I THINK WE'RE TO DO IT MOST PROBABLY FOR LESS COST THAN ANY OTHER SITE OF THIS SIZE THAT I'M AWARE OF IN THE 21 STATES I'VE BEEN IN AND OUT OF SINCE 1985.

THE ONLY OTHER COMMENT I'D MAKE AT THIS POINT IN TIME, WE NEED TO MOVE FORWARD IN MY OPINION.

WE'VE WAITED, BECAUSE OF ALL THESE TEST PROCEDURES. IN ORDER TO CONTROL THE SEEPS OUT THE SIDE AND TO GET THE BENEFIT -- GET LESS METHANE GENERATION AND LESS WATER IN THE PLUME, THAT'S GONE DOWN SINCE WE PUT THAT OTHER CAP ON. WE NEED TO GO BACK OUT THERE AND DO SOME ADDITIONAL TOP COVER, NOT NECESSARILY WITH CLAYS, BUT WITH SOME OTHER MATERIALS INCLUDING SOME TOP SOILS, AND WE NEED TO GET IT VEGETATED OUT. BECAUSE IF WE CAN GET IT VEGETATED OUT AND GET A STAND -- A GOOD STATION ON IT, WE'RE GOING TO GET AN EVAPORATION PROCESS TO TAKE PLACE WHERE IT WILL EVAPORATE AND GO OUT. IT WON'T CONTINUE TO SEEP DOWN INTO THE GARBAGE AND HAVE A CONTAMINANT PROCESS.

AND WE -- I THINK WE HAD DOWN IN CAYCE WE PUT -- WE HAD FOUR ACRES UNCOVERED FOR QUITE SOME TIME. SINCE WE GOT THAT 40 ACRES FINALLY COVERED WITH AN AMOUNT OF CLAY, IT PUT ALL THAT IN PLACE AND TRIED TO VEGETATE IT. THE AMOUNT OF WATER GOING IN THE PLUME PROCESS HAS GONE DOWN. IS THAT CORRECT, TOO? I MEAN, WHAT I'VE READ ABOUT IT, STUDIED ABOUT IT, SAYS THAT -- OKAY. IT'S GONE DOWN.

IF WE CAN GET BACK IN THERE AND GET A BETTER VEGETATIVE COVER IT WILL BECOME MORE ATTRACTIVE,

WE'LL GET LESS METHANE GENERATION BECAUSE IT CUTS OFF THE MOISTURE TO THE GARBAGE, THAT'S GOING TO GO DOWN. AND WE'LL HAVE A LESS CONTAMINANT PROCESS TO WORRY ABOUT, AND WE'VE GOT THE PUMP PRETREAT OR PUMP AND CIRCULATE THE PTOW'S.

AT THIS POINT IN TIME, WE BELIEVE THE CAYCE PLANT CAN HANDLE THE PROCESS WITHOUT ANY DIFFICULTY. THE PALMETTO WOOD PRESERVING SITE HAS BEEN REMEDIED. IF YOU REMEMBER SEVERAL YEARS AGO WHEN I WAS IN THE TRUCKING BUSINESS, I HAULED OFF ALL THAT STUFF THAT WAS SITTING DOWN THERE ON THE SIDE OF THE BOILERWOOD (PHONETIC) COMMUNITY -- REMEMBER WHEN RICHLAND COUNTY GOT THE COURT ORDER AND SAID I COULDN'T GO THROUGH RICHLAND COUNTY IN THE TRUCK NO MORE AND THEY TRIED TO LOCK ME UP BECAUSE I DIDN'T HAVE THE AUTHORITY OR THE PERMISSION TO HAUL THE STUFF?

WELL, ALL I'M TRYING TO TELL YOU IS THAT SITE IS ALSO BEING REMEDIED. WE GOT THOSE THREE SITES VERY CLOSE TOGETHER, IN MY OPINION, IN THE END. IF IT'S NECESSARY FOR THE SITE NEXT TO BOILERWOOD, WHAT ELSE WE'VE GOT GOING ON, ALL THOSE WOULD BE TIED TOGETHER AS FAR AS PUMPING OUT IF THAT BECOMES A NECESSITY IN HANDLING THE PROCESS TO MOVE FORWARD.

I THINK WE'VE DONE WELL WITH THE ENGINEERING SIDE OF IT, I THINK WE'VE MOVED RESPONSIBLY. NOW, I KNOW YOU EXPECT ME TO SAY THAT, BUT I THINK THE RECORDS, IF YOU WILL LOOK INTO THEM, WILL ALSO VERIFY WHAT I TOLD YOU.

MS. LARKEE: WHAT KIND OF ROYALTIES ARE YOU TALKING ABOUT?

MR. SPIRES: GAS WAS RECOVERED SEVERAL YEARS AGO WHERE HE WOULD RECOVER METHANE, HE WAS GOING TO SELL IT AND HE DOES SELL IT TO THE ASPHALT PLANT ACROSS THE ROAD. HE DON'T SELL IT OVER THERE ANYMORE?

MR. GENSAMER: SENDS IT DOWN TO. . .

MR. SPIRES: SENDS IT ALL DOWN TO---

MR. GENSAMER: GASTON COPPER.

MR. SPIRES: SENDS IT ALL DOWN TO GASTON COPPER. AND THERE ARE PEOPLE WHO TAKE METHANE OUT AND THEY CAN DO A LOT OF THINGS. YOU CAN USE IT TO FIRE GAS TURBINES, TO PRODUCE ELECTRICITY AT SOME SITES. I MEAN, THERE'S ALL KINDS OF THINGS THAT CAN BE DONE WITH IT.

MS. LARKEE: WHAT KIND OF MONEY ARE WE TALKING?

MR. SPIRES: IT'S -- THE MONEY IS NO BIG THING. IN FACT, QUITE FRANKLY, IT'S BEST THAT IT'S

BEING DONE THAT WAY BECAUSE IT'S SAVING THE TAXPAYERS THE COST TO PUT IN THE GAS METHANE RECOVERY SYSTEM AND TO RUN THE SYSTEM ITSELF. AND AS LONG AS HE'LL STAY AND OPERATE IT, WE'LL BE THE BETTER OFF BECAUSE THAT'S THAT MANY LESS DOLLARS WE HAVE TO PUT INTO IT IF HE THINKS HE CAN MAKE A PROFIT OUT OF DOING IT.

ANYTHING THE PRIVATE SECTOR CAN DO -- UNDERSTAND, I'M IN FAVOR OF PRIVATIZATION AS FAR AS A LOT OF PROCESSES GO. WE NEED MORE THAN WE'VE GOT NOW. AS LONG AS WE HAVE SOMEONE THAT WILL STEP FORWARD TO DO THAT, I'D RATHER THEM DO IT AND TAKE THE RISK THAN IT BE BORNE BY THE TAXPAYERS OF LEXINGTON COUNTY. ANY OTHER QUESTIONS I CAN ANSWER I'LL BE GLAD TO ANSWER.

MR. GENSAMER: JUST ONE. DAN GENSAMER AGAIN. I OWN AND OPERATE THE PAR TEE DRIVING RANGE ON TOP OF THE LANDFILL, AND I WOULD HAVE A MUCH BETTER COVER-UP THERE ON TOP OF IT VEGETATIONWISE IF I COULD GET SOME WATER TO IRRIGATE WITH. LAST YEAR I GOT WIPED OUT WITH THE DROUGHT, WHAT LITTLE COVER I HAD UP THERE. AND WHAT'S STOPPING ME IS I HAVE NO MEANS TO WATER THE AREA THERE.

AND I HAVE NOT -- I'VE TALKED TO THE ENGINEERS AND EVERYBODY, AND NOBODY'S GIVEN ME A REMEDY

BESIDES BUYING IT FROM CAYCE. AND I DO USE CAYCE WATER FOR MY TEE BOX AND OTHER AREAS, BUT I CANNOT AFFORD TO USE THE WATER OUT ON THE RANGE. IF I COULD GET SOME WATER AT A DECENT PRICE I WOULD DO THAT, AND IT WOULD SAVE EVERYBODY THE PROBLEM BECAUSE I CAN GET GRASS TO GROW IF I CAN GET WATER.

I JUST CAN'T AFFORD THE WATER. MY WATER BILL DURING THE DROUGHT LAST YEAR WAS OUTRAGEOUS. I PAY DOUBLE BECAUSE I'M OUTSIDE THE CITY LIMITS, SO I REALLY PAY A LOT FOR MY WATER. I'M VERY STINGY WITH IT.

SO IF WE COULD ADDRESS THAT IN THERE, THAT WOULD BE ONE REMEDY -- EVEN WITH THE AREA THAT LOOKS LIKE IT'S VEGETATED ON THE OTHER SIDE, IF YOU WALK THROUGH THERE YOU'LL FIND OUT IT'S NOT VERY WELL VEGETATED. THERE'S A STREAM RUNNING THROUGH THERE, BECAUSE -- THERE'S JUST PATCHES OF IT OUT THERE.

MR. SPIRES: MRS. NICHOLSON TOUCHED ON SOMETHING A WHILE AGO. YOU SEE, WE WOULD LIKE TO DO SOMETHING ABOUT THE COVER. WE'D ALSO LIKE TO DO SOMETHING MORE ABOUT THE SIDE -- THE SIDE SEEPAGE.

BECAUSE WE DON'T WANT TO CONTAMINATE THE TESTING PROCESS, WE HAVE BEEN UNABLE TO COME BACK

IN AND DO SOME THINGS THAT MIGHT HELP THE VEGETATIVE COVER OR DUE TO THE SIZE BECAUSE WE DON'T WANT TO AFFECT IN AN UNNATURAL WAY THE SEDIMENT AND THE OTHER TESTING PROCESS.

THAT'S ANOTHER REASON WE NEED FOR -- WHATEVER THE PROBLEM IS, WE NEED FOR THAT TO BE MADE BY E.P.A. SO THAT WE CAN MOVE FORWARD WITH SOME -- WITH OUR PROGRAM IN RELATIONSHIP WITH THE PROCESS AND THE SIDE SEEPS. AND IF IT'S GOING TO COST SEDIMENTATION PONDS, THEN THE SEDIMENTATION PONDS IS SOMETHING THAT WE CAN ADDRESS AND LOOK TO. IF YOU GET INTO SEDIMENTATION PONDS THAT CONTROL YOUR SURFACE WATER, THEN THAT WILL DEFINITELY BECOME A CONTAMINATED SOURCE OF WATER.

THE ONLY CONTAMINATION IN WATER IS GOING TO CAUSE WHAT'S CALLED "LEACHATE," IS WHERE THE RAIN WATER COMES IN CONTACT WITH THE GARBAGE ITSELF. SO IF YOU CAN SHED IT, EITHER THROUGH THE EVAPORATION PROCESS OR SHED IT WHEN YOU GET INTO YOUR SEDIMENTATION PONDS, IT NEVER BECOMES A CONTAMINATED PROCESS AND YOU'RE GOING TO HAVE TO SPEND VERY EXPENSIVE DOLLARS TO DEAL WITH IT.

THAT'S THE REASON WE NEED WHATEVER YOUR FINAL RECOMMENDATION IS AS PRUDENTLY AS POSSIBLE BUT AS QUICKLY AS POSSIBLE. WE NEED FOR THOSE SOLUTIONS

TO COME FORWARD SO WE CAN START EFFECTING THOSE OTHER SOLUTIONS THAT WILL HELP THE OVERALL SITE IN RELATIONSHIP TO GENERATION OF LEACHATE, THE SIDE WALL SEEPS AND THE VEGETATIVE PROCESS.

SO WHETHER WE'RE GOING TO RECIRCULATE OR WHETHER WE'RE GOING TO DO SOMETHING ELSE, IT DON'T MATTER HOW MUCH WATER HE PUTS. IF WE DON'T GET GOOD SOIL ON TOP OF THAT SITE, HE'S STILL NOT GOING TO HAVE A VEGETATIVE COVER.

MR. TANNER: LEGALLY I'M MOVING THE PROCESS ALONG AS FAST AS I CAN RIGHT NOW. PART OF IT INVOLVES---

MR. SPIRES: I'M NOT SAYING YOU'RE NOT, BUT I'M JUST STRESSING TO YOU HOW IMPORTANT I THINK IT IS. SO LET'S DRAW SOME CONCLUSIONS SO WE CAN MOVE FORWARD.

MR. TANNER: WELL, WE'RE WORKING ON IT AS FAST AS WE CAN. SOME OTHER QUESTIONS?

MR. PARKER: TERRY -- LANE PARKER AGAIN. I'D LIKE TO COMMEND LEXINGTON COUNTY WITH THE WAY THEY'RE HANDLING THIS PROCESS, GOING AHEAD AND EXPEDITING THIS THING, YOU KNOW, ABOUT GETTING THESE COVERS -- THE SITUATION REMEDIED.

ONE OTHER QUESTION I'D LIKE TO ASK YOU IS I KNOW THE ALTERNATIVE 4(A) WAS THE RECOMMENDED

PROCEDURE THAT YOU -- THAT THE E.P.A. RECOMMENDS FOR THIS.

USING THE CRADLE TO THE GRAVE THEORY, WHICH IS THE PEOPLE RESPONSIBLE FOR IT UNTIL IT REACHES THE GRAVE, NO LONGER A DANGER TO ANYBODY ELSE, WOULD THIS THEORY 4(A), WOULD THAT ACCOMPLISH THAT THEORY?

MR. TANNER: ACCOMPLISH THE THEORY THAT. . .

MR. PARKER: IN OTHER WORDS, FROM THE DAY THE CONTAMINANT IS BORN TO WHERE YOU FINISH UP WITH ALTERNATIVE A, THAT IT WOULD BE NO LONGER A DANGER TO ANYBODY -- THE SITE, YOU KNOW, THE CONTAMINANTS?

MR. TANNER: THE ALTERNATIVE THAT WE'RE PROPOSING WOULD KEEP THE SITE SAFE -- NOT ONLY TODAY BUT TOMORROW AS WELL---

MR. PARKER: THAT'S WHAT I'M TALKING ABOUT. WE'RE SPEAKING FROM THE DAY IT'S BORN AND THE NEXT DAY, THAT'S WHAT I WAS SPEAKING OF.

MR. TANNER: YES. AND THE ALTERNATIVE AS WELL INCLUDES MONITORING. WE WANT TO GO BACK AND MAKE SURE THAT THINGS HAVEN'T CHANGED AND THERE'S NOT ANY -- NOT SOMETHING LEAKING OUT THAT WE DIDN'T SEE BEFORE.

MR. SPIRES: I DON'T WANT ANYBODY TO GO HOME NOT UNDERSTANDING. WE SPENT A LOT OF MONEY ALREADY PUTTING IN ALL THESE WELLS. WE PUT 32 WELLS UP; OKAY? THE PROCEDURE FOR WELLS AND HOW OFTEN THEY'RE TESTED IS WHAT?

MR. BROOKS: QUARTERLY.

MR. SPIRES: IT'S BASICALLY QUARTERLY. SO UNDERSTAND, WE'VE PUT ALL THOSE WELLS IN WITH ALL THE EXISTING WELL SYSTEMS, AND THIS IS NOT TALKED ABOUT ONCE A YEAR OR BIANNUAL PROCESS. THESE WELLS AND THIS PROCESS OF TESTING IS AN ONGOING THING OCCURRING ON A QUARTERLY BASIS. THAT'S WHY IT'S SO DOGGONE EXPENSIVE, BECAUSE THE ANALYTICAL DATA YOU TALKED ABOUT EARLIER IS EXPENSIVE. AMEN. IT IS.

AND WHEN YOU DO IT THAT OFTEN, IT IS VERY EXPENSIVE. AND IF YOU DO IT THE RIGHT WAY, EVENTUALLY A SITE WILL -- THE THEORY IS THAT THE SITE WILL FINALLY START GIVING OUT MUCH LEACHATE AND IT FACTORS IN BECAUSE IT BASICALLY TURNS ITSELF INTO A BENIGN STATE, ONCE THE DECOMPOSITION BASICALLY OCCURS AND FULFILLS ITSELF. AND THAT'S HOW YOU GET THE SITE SAFE WITH ALL THIS OTHER PROCESS.

MR. TANNER: IT WOULD CERTAINLY

STABILIZE. ONCE IT DOES STABILIZE, WE CAN REDUCE THE TEST TO MAYBE TWICE A YEAR OR ANNUALLY.

MR. SPIRES: THAT'S RIGHT.

MR. TANNER: I WOULD AT THIS TIME LIKE TO HEAR FROM MAYBE SOMEONE ELSE WHO HASN'T SPOKEN UP TONIGHT. IS THERE ANYONE THAT HAS ANYTHING THAT HAS BEEN A LITTLE HESITANT TO BRING UP?

MR. GENSAMER: I'VE GOT ONE OTHER THING.

MR. TANNER: OKAY.

MR. GENSAMER: I'D JUST LIKE TO SAY I AM AT THE SITE EVERY DAY, SEVEN DAYS A WEEK FROM TEN IN THE MORNING UNTIL TEN AT NIGHT. AND IF ANYBODY WOULD LIKE TO COME VISIT, I WOULD GLADLY SHOW THEM THE TOP PART OF THE SOIL, YOU'RE CERTAINLY WELCOME TO COME VISIT.

MR. TANNER: YES, MR. NICHOLS?

MR. NICHOLSON: WHEN YOU'RE ACTUALLY MOVING THE OLD DUMP TO THE NEW DUMP, WILL THERE BE WARNINGS ON THE DAY -- YOU MENTION HERE "SHORT-TERM ENVIRONMENTAL IMPACT AND HAZARD." WOULD THERE BE WARNINGS SAYING THE DUST MIGHT BE BAD? OR DO WE HAVE TO SORT OF WATCH?

MR. TANNER: NO, WE'RE NOT TRYING TO SNEAK ANYTHING PAST ANYONE. WHAT WE WOULD DO WOULD PROBABLY INVOLVE TRENCHING, OR THERE'S A SPECIFIC

TERM FOR IT WHERE YOU DRAG BUCKETS ACROSS THE AREA THAT CONTAIN THE SOIL AND DRAG IT INTO ANOTHER AREA, WHETHER IT BE THROUGH BACKHOE OR TRUCK OR WHATEVER.

MRS. NICHOLSON: WOULD YOU HAVE TO REMOVE THE CAP ON 321 IN ORDER TO ADD STUFF, OR WILL YOU BE TUNNELING IN THE SIDE OF IT TO ADD?

MR. TANNER: WELL, WE'RE NOT SURE AT THIS TIME. THAT'S OPEN. WE MAY WELL DECIDE TO SEND IT TO THE BRAY PARK DUMP AND BYPASS THE ISSUE OF DISTURBING THE EXISTING CAP AT ALL. IT REALLY DEPENDS. WE WOULD TAKE EVERY MEASURE POSSIBLE TO CONTROL THE DUST. I -- BECAUSE I'VE NEVER ACTUALLY MOVED ANYTHING LIKE THIS, I'M NOT SURE. WE MAY VERY WELL RUN ADS. I DON'T KNOW. WE WOULD DO EVERYTHING TECHNICALLY POSSIBLE TO MAKE SURE THAT NO RELEASES OCCUR, WE DIDN'T THROW CONTAMINATED DUST INTO THE AIR.

MR. PARKER: TERRY, IF I MAY, IT'S GETTING LATE. MOST DEFINITELY ON THE CLEANUP SITE LIKE THAT, YOU WOULD KNOW WHAT'S GOING ON. YOU HAVE EVERY RIGHT TO KNOW UNDER CFR-1910-120, WHICH IS THE RIGHT TO KNOW. YOU'LL HAVE EVERY RIGHT TO GO THERE.

THEY HAVE -- THEY HAVE TO FURNISH YOU EVERY

DOCUMENT, EVERYTHING THAT'S ON THAT SITE AS A PRIVATE CITIZEN. YES, IT WILL BE CONTROLLED DUST AND EVERYTHING ELSE, LIKE WET SOCKS THAT WOULD BE IN IT. VERY ELABORATE PROCESS.

MR. SPIRES: THE TRUTH OF IT IS IN THESE PROCESSES THERE'S GENERALLY NOT ANY ACTIVITY RELATED WITH MOVING A SMALL SITE INTO ANOTHER SITE. FOR EXAMPLE, IF YOU PUT IT IN THE BRAY PARK DUMP OR YOU BRIDGED IT, AS IT'S CALLED, OKAY, FROM ONE SITE TO THE OTHER AND EXTENDED YOUR COVERED CAP. THERE SHOULD NOT REALLY BE ANY ACTIVITY TO GO ON THAT WOULD CAUSE ANYBODY IN THE AREA TO BE UNDER ANY DISCOMFORT WHEN TURNED OFF.

MR. TANNER: OTHER QUESTIONS?

(NO RESPONSE)

MR. TANNER: WELL, I GUESS IF THERE ARE NO MORE QUESTIONS, WE'LL CLOSE UP FOR TONIGHT. THANK YOU FOR YOUR PATIENCE, AND YOU HAVE MY PHONE NUMBER ON THOSE FACT SHEETS. IF THERE'S ANYTHING ELSE THAT COMES UP IN YOUR MIND A LITTLE BIT LATER, GIVE US A CALL. THANKS AGAIN.

(THE PRECEDING WAS CONCLODED AT 8:49 P. M.)

* * *

CERTIFICATE OF REPORTER

STATE OF SOUTH CAROLINA

SS:

COUNTY OF LEXINGTON

I, LORI S. MORTGE, CERTIFIED COURT REPORTER (GA) AND NOTARY PUBLIC IN AND FOR THE STATE OF SOUTH CAROLINA AT LARGE, DO HEREBY CERTIFY THAT THE ABOVE-ENTITLED CAUSE WAS HEARD AS HEREINAFTER SET OUT; THAT I WAS AUTHORIZED TO AND DID REPORT IN SHORTHAND THE PROCEEDINGS AND EVIDENCE ADDUCED AND OFFERED IN THE SAID PROCEEDINGS, AND THAT THE FOREGOING AND ANNEXED PAGES, NUMBERED 3 THROUGH 75, INCLUSIVE, COMPRISE A TRUE AND CORRECT TRANSCRIPTION OF MY STENOGRAPHIC REPORT OF THE SAID CAUSE TAKEN DURING THE SAID HEARING.

IN WITNESS WHEREOF, I HAVE HEREUNTO AFFIXED MY SIGNATURE THIS 28TH DAY OF APRIL, 1994.

_____

LORI S. MORTGE, CCR (GA) AND NOTARY PUBLIC

MY COMMISSION EXPIRES: 2/2/97